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DISEASES OF CHILDREN.

HATFIELD.

? QUIZ-COMPENDS ? NO. 14.

A

COMPEND

OF

DISEASES OF CHILDREN.

ESPECIALLY ADAPTED FOR THE USE OF MEDICAL STUDENTS.

BY

MARCUS P. HATFIELD, A.M., M.D.,

PROFESSOR OF DISEASES OF CHILDREN, CHICAGO MEDICAL COLLEGE, PHYSICIAN TO WESLEY HOSPITAL, ETC.

WITH A COLORED PLATE.

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1890.

TO

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OF THE

UNIVERSITY OF BERLIN,

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IS GRATEFULLY DEDICATED.

PREFACE.

This little book is founded upon Dr. Ernst Kormann's excellent "Compendium der Kinderkrankheiten," translated many years ago with the coöperation of Dr. E. J. Doering, while we were fellow students at the University of Berlin. This joint translation in time became the basis of an annual course of lectures delivered at the Chicago Medical College, and these lectures recondensed have furnished the material for this Compend. At this date it would be difficult, if not impossible, to state exactly how much credit should revert to Kormann, Bouchut, Baginsky, Steiner and others, who were all drawn upon freely in the preparation of these lectures, and in a work of this character, individual acknowledgment has not been attempted except in case of direct quotation.

Unstinted assistance has been freely given by Dr. R. Engleman, and an invalid cousin, without whose aid the preparation of this work would have been impossible, with the other demands of a professional life.

M. P. H.

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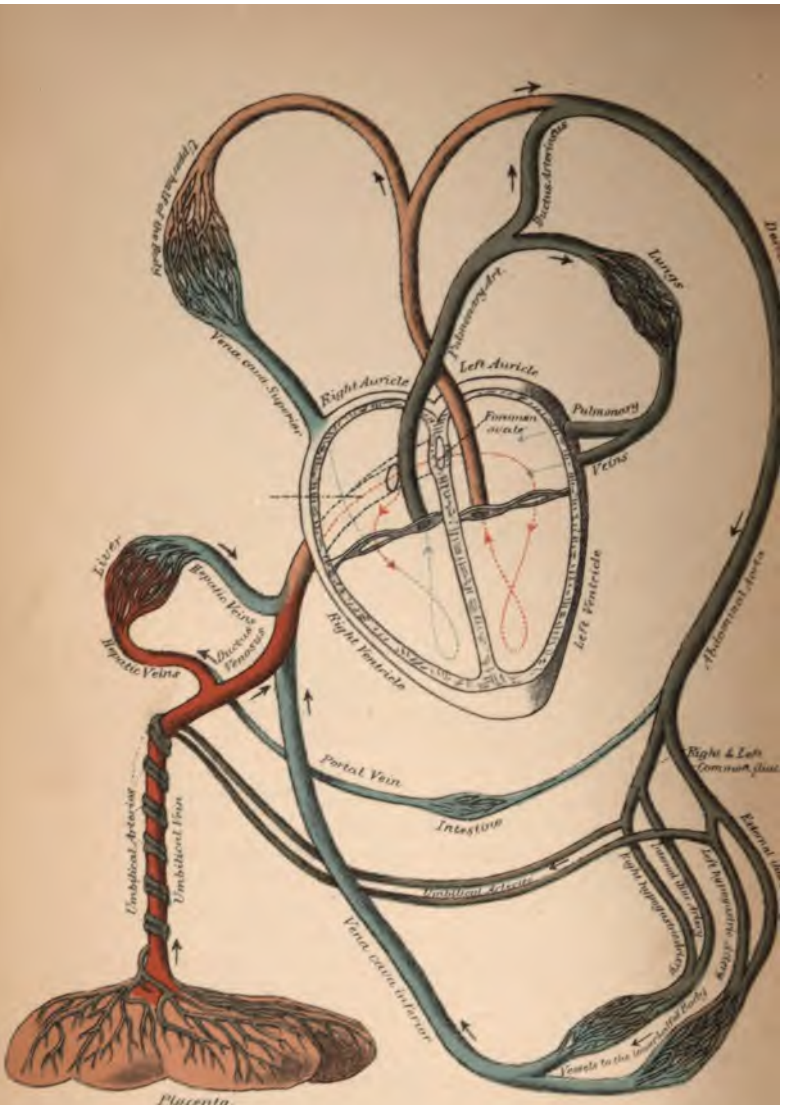

DIAGRAM OF FŒTAL CIRCULATION.

Prayer del

A COMPEND

OF THE

DISEASES OF CHILDREN.

SECTION I.

ANATOMY AND PHYSIOLOGY.

1. **The Tissues** of a child differ chiefly from those of an adult in relative size, softness and elasticity.

2. **The Circulation** of blood in the fœtus is as follows: From the placenta, through the umbilical vein, which enters the body at the umbilical ring and passes to the under side of the liver. Here the current divides, a part going through the ductus venosus (see plate opposite) directly into the inferior vena cava (vena cava ascendens); the remainder enters the portal vein and, as in the circulation of adult life, passes through the liver, before entering the vena cava ascendens, and through it to the right auricle. Here the currents of the descending and ascending venæ cavæ join, but do not coalesce, for the bulk of the blood which enters the right auricle through the inferior vena cava does not follow the course of the adult circulation, but flows directly into the left auricle, through the foramen ovale and thence into the left ventricle and aorta, as in the adult. The course of the current entering the right auricle from the superior vena cava (descendens) is quite different, for this blood, in the main, passes through the tricuspid valve into the right ventricle, and thence into the pulmonary artery, as in the adult; but unlike the adult, the bulk of this blood never reaches the lungs, but passes directly into the aorta by the ductus arteriosus (Botalli), which passes from the pulmonary artery to the aorta.

entering below the origin of the great vessels. A small portion of blood flows past the ductus arteriosus into the lungs, via the pulmonary arteries, just sufficient for the growth and nourishment of the lungs, then passes through them, and, as in the adult, enters the left auricle, where it is mingled with the blood entering the same cavity via the foramen ovale, as described above, and follows subsequently the course of the adult circulation, until it at last enters the umbilical arteries, which are given off by the hypogastric arteries, and which convey venous blood directly from the fœtus to the placenta.

3. The changes in the **fœtal circulation** which occur at birth are as follows:—

(*a*) Disuse of the ductus arteriosus, owing to the expansion of the lungs, bending and thus obstructing this duct and relieving aortic pressure, with coincident closure of the foramen ovale. Neither the foramen ovale nor the ductus arteriosus become completely impervious immediately after birth, for the first may remain open for a month, and the ductus often is not entirely closed until the third month.

(*b*) Obliteration of the arteria umbilicales, in which, immediately after the detachment of the placenta, thrombi form, owing to the lessening of arterial pressure. The umbilical arteries thus occluded are later transformed into the lateral ligaments of the bladder.

(*c*) Thrombosis of the umbilical vein similarly follows the detachment of the placenta. This thrombosis extends past the umbilical ring to the bifurcation of the umbilical vein at the end of the transverse fissure of the liver, and fills the ductus venosus (Arantii) with a clot which eventually converts it into the ligamentum teres of the liver.

4. **Weight** of blood in newborn infant about 5 per cent. of body weight; weight of blood in adult 1 : 13, or about 8 per cent. of body weight.

5. **Pulse** at birth 130–150 per minute, irregular and very easily disturbed by slight causes; at end of first year, 100–120; second year, 100; fifth year about 90. Pulmonary blood pressure in the child is greater than in the adult.

6. **Respiration** varies with age and is easily disturbed; at birth, 40 per minute; from two months to two years, 25–35; from

two to twelve years, 18 when sleeping, and about 24 when awake, and is markedly abdominal. Lungs in children are relatively less, as compared with length and body weight, than in the adult. A sound child ought to breathe with its lips closed, through the nose, and excretes nearly double the amount of carbon dioxide for an equal amount of body weight compared with the adult.

7. **Digestion.**—(*a*) The alimentary canal is relatively longer in the child (vide *Constipation*), the stomach almost vertical, and its musculature is relatively weak. Digestion differs in several ways from that of the adult, *e.g.*, in the absence of saliva during the first months, its place being taken by pancreatic fluid, whose fat digesting powers are slight during the early months of life, and at which time Brunner's and Lieberkuhn's glands are also not fully developed.

(*b*) **The liver** is relatively more vascular and larger than both lungs, up to puberty, when this condition is reversed. The bile contains only a small proportion of inorganic salts, cholesterin, lecithin and the bile acids, and especially glycocholic. (See *Intestinal Indigestion.*)

(*c*) **The feces,** with an exclusively milk diet, should have a bright mustard-yellow color, are of the consistence of ointment, feebly acid and contain about 85 per cent. of water, white flecks of fat, calcic lactates, traces of bilirubin, intestinal epithelial cells and mucus bacteria. These bacteria have not yet been fully studied and differentiated, but the bacterium lactis aerogenes, and various micrococci, seem to be fairly constant. 100 parts milk diet should produce about three parts of feces on an average.

(*d*) **Meconium** is the name given the dark-green feces first passed by the newborn child, from their resemblance to inspissated poppy juice. Meconium is viscid, odorless, feebly acid and consists of partially digested amniotic fluid, epidermal cells, fine hairs, cholesterin crystals and intestinal epithelial cells, but contains no products of decomposition nor bacteria when first voided.

8. **Urine** is secreted in utero, and is voided both before and often during the act of birth. The kidneys are relatively large at birth, and often show a peculiar reddish discoloration of their papillæ, produced by a deposit of uric acid crystals and urates, especially well marked in those children whose supply of oxygen

has been deficient at birth. If such children are not given water freely, there is insufficient fluid passing through the kidneys to dissolve these urates, which consequently appear as reddish-brown streaks or a brick-dust deposit in the tubuli uriniferi. This has been called uric acid infarct, and is of little pathological significance. The *quantity* of urine increases rapidly for the first five days, after that more slowly. At this time it averages from 12–13 ozs. (417 c.c.); after two years it reaches 15 ozs. (500 c.c.), rising to 18–19 ozs. (600 c.c.) at four years. The specific gravity of the urine increases up to the tenth day, after that it slightly diminishes. Average specific gravity, 1005–1010. The urine of early life is often turbid, dark and acid; later it becomes clear straw yellow and generally neutral in reaction. The excretion of urea is relatively less in children than in adults, and still less relatively are the phosphates. The same is true of chloride of sodium.

Traces of albumin may be normally found in the urine of the first days of life, but it should entirely disappear early.

9. **Temperature** at birth is 99° F. (37.7° C.), falling in a few hours a degree or more Centigrade (37.7°–36.2°), but rising again within thirty-six hours to about its initial height. The temperature in a young child is best taken in the anus or vagina; and it should be remembered that comparatively trifling causes in infants may produce relatively great variations in temperature, especially through depressing agents. In general, the temperature rises during the forenoon, reaches its highest point in the afternoon, begins to sink about six, and reaches its minimum in the early morning hours, shortly after midnight. It should also be remembered that in very young children the temperature may mark high (105–106°) without necessarily grave results, except in those predisposed to eclampsia.

Aphorism I.—Lowered temperature is found in anæmia, profuse hemorrhage, collapse, death agony and sclerema neonatorum, hydrocephaloid, and in children prematurely born. In early infancy there is no absolute relation between organic lesions and the height of temperature observed, for high fever, great restlessness, and even convulsions, may disappear quickly, and leave absolutely no lesions behind. (Bouchut.)

Aphorism II.—A temperature above 100° (37.8°–38° C.) during

the first four days of life is pathological. The same is true of rise of temperature during sleep.

Aphorism III.—The morning and evening differences in temperature in the fevers of children are, as a rule, greater than in the adult.

Aphorism IV.—High febrile heat with sudden chilling of the extremities is one of the frequent phenomena of fever in very young children.

10. **The Skin** of a newborn child is more or less covered with a smeary, white substance (Vernix caseosa), readily soluble in lard or vaseline, before the first bath, after which the surface of the child's body, if healthy, appears reddened, delicate in texture and covered with fine hairs. During the first week of life a quite extensive exfoliation of the epidermis takes place. The hair with which the head of the child was covered at birth gradually falls out and is succeeded by an after growth.

11. **The Sudoriferous Glands** secrete but little during the first weeks of life. The mammary glands of the newborn are not infrequently found in a state of congestion and enlargement, in both sexes, often sufficient to produce in them a few drops of a milky secretion. ("Hexenmilch," see *Mastitis.*)

12. **Dentition** commences usually at the seventh month, but it may be deferred till the twelfth to the eighteenth month, especially in rickets, even to the second year. When a child is born with teeth, they usually fall out early. The temporary teeth (twenty in number) are generally cut in pairs. The following table indicates, in months, the usual times of their appearance, above and below, thus:—

Molars.	Canine.	Incisors.	Canine.	Molars.
24–12	18	9–7–7–9	18	12–24

The lower teeth usually are a little in advance of the upper. The permanent (thirty-two in number) appear in years as follows:—

PERMANENT TEETH.

23–13–6 (Molars)			(Molars) 6–13–23	
Bicuspids.	Canine.	Incisors.	Canine.	Bicuspids.
10–9	11	8–7–7–8	11	9–10

At two years a child ought to have 16 teeth.

13. **Saliva.**—The earliest saliva secreted by the infant is small in quantity and deficient in ptyaline ; the starch converting power of the infant up to the sixth or seventh month residing in the pancreatic diastase. After the sixth month the infant's saliva has properties similar to that of the adult, although not fully developed until after dentition.

14. **The Lachrymal Glands** secrete very sparingly during the first few weeks of life ; the **sebaceous glands** often continue their interuterine activity, especially those of the hairy scalp. (See *Seborrhœa.*)

15. **The Thymus Gland** at birth lies immediately posterior to the manubrium in the anterior mediastinum, and consists of a long, flattened, lobulated body, to which are laterally attached two unequal lobes, which closely resemble in structure the salivary glands, but are subject to extraordinary variations in size. Its uses are unknown, and it normally diminishes in size from the second year to puberty, when it should have disappeared. Morphologically it consists of a long tube to which the primary nodules are attached, like knots on a rope. Each lobule contains a cavity communicating with a larger central cavity—the reservoir of the thymus—which contains a whitish fluid in which float numerous corpuscles similar to those found in the chyle.

16. **The Growth of the Child.**—The average length of the newborn child is 18 inches (50 cm. for boys and 49 cm. for girls), and its weight about one-thirtieth that of its adult weight (3300 grammes).

The increase in the length of the child's skeleton is most rapid during the earlier months of its life, decreasing with each year up to the fifth, in about the following ratio : first year, 16–20 cm. (5–7 inches) ; second year, 10 cm. ; third year, 7.5 cm. ; fourth year, 6.5 cm., and during the fifth year to the sixteenth or eighteenth year there is a yearly increase of 5 cm. (1½ inches), after 18 this growth decreases to 3–4 cm. per annum until the full growth is attained between the twentieth and twenty-fourth years.

Growth is retarded by poor nourishment, impure air and certain diseases of nutrition, such as scrofula, etc. On the other hand certain exanthemata and other as yet unknown conditions, have the power at times of greatly accelerating growth, but such rapidly

growing children are apt to become feeble and require especially good food, much rest and relief from their studies.

17. The smaller **fontanelle** closes immediately after birth, but the anterior fontanelle remains normally open until the middle or the end of the second year. According to Elsasser the width of the great fontanelle increases up to the ninth month of infancy, for the reason that the edges of the fontanelle can only increase in like measure with the sutures forming the fontanelle, for otherwise the borders of the fontanelle must grow more rapidly than the sutures and cranium in general. The sutures begin to coalesce about the ninth month and after that the fontanelle lessens in size. The reason for the late coalescence of the sutures is the enormous development of the brain during the first months of life. The tension observed in the still open fontanelle often affords valuable aid in diagnosis, *e. g.*

Aphorism V.—Protuberance of the fontanelle indicates hyperæmia of the brain, or exudation into the same, most marked in hydrocephalus. Depression of the fontanelle implies cerebral anæmia, and is found in hydrocephaloid, general atrophy or the collapse of cholera morbus and Asiatic cholera.

Growth of the Head.—The average circumference of the head at birth is 13 inches (34 cm.) its long diameter 11.2. The increase in the long diameter up to the third year is 4.5 cm., during the next four years 2.3 cm. more. The full development of the cranium being about completed by the end of the seventh year.

18. **Weight.**—The weight of the fully developed child at birth is about 3300 grammes for boys, and 2900 for girls. During the first three or four days there is a loss of about 200 grammes (average 222 or 6.5 per cent. to 6.9 per cent.), which is regained by the twelfth day, and usually trebled during the first year. Hahner's observations show that the increase in a child's weight is not regular, but irregular, though the most rapid gain takes place, as a rule, in the second month of life, though it may occur in the fourth. According to Russow, there is a marked difference in the growth of children who are nursed by their mothers and those who are bottle-fed, for the children of the first double their weight in five months and treble it within twelve, while children who are arti-

ficially fed require two years to produce a similar increase in weight. The advantages gained by children that are nursed are apparent as late as the eighth year, when, according to Russow, children who have been nursed at the breast still show on an average a gain of 2000 grammes over those artificially fed.

SECTION II.

CLASSIFICATION OF DISEASES OF CHILDREN.

Diseases of children may be divided into those—

I. **Acquired before birth.** (Prenatal.)

(*a*) Originating during fœtal life (consequently congenital diseases, *e.g.*, endocarditis, incomplete development, malformations, diseases from the mother, etc.).

(*b*) Hereditary diseases, or those descended from parents, as insanity, epilepsy, hemorrhophilia, syphilis, and especially tuberculosis.

II. **Acquired during and on account of birth.** (Natal.) See Section III.

III. **Acquired after birth,** or those diseases peculiar to children, *i.e.*, those arising from—

(*a*) The changes which certain organs, or portions of organs, undergo after birth.

(*b*) Faulty nutrition, or methods of nourishment.

(*c*) The growth of the body and its parts, as the teeth, bones, etc.

IV. **Children's diseases in a broader sense,** *i.e.*, such as occur in man only once, and are therefore frequent among children, spreading through attendance at school, etc; viz., acute infectious diseases, parasites, chorea, etc., or produced by improper positions, caused by sitting upon badly constructed school benches, *e.g.*, scoliosis, anæmia, short-sightednes, epistaxis, etc.

Prenatal diseases may conveniently be divided into—

(*a*) Hereditary, or those transmitted from parent to child, as syphilis, epilepsy, tuberculosis.

(*b*) Congenital, or those dating from birth, *e.g.*, those with which the child is born, as exomphalus, etc.

Aphorism VI.—All prenatal diseases, both hereditary and congenital, must be due to either maternal, paternal or climatic causes, perhaps all combined. Chief among these are the—

(*a*) Maternal influence, under which may be grouped the prenatal influence of too high temperature—maternal—which is invariably fatal above 106° F.

(*b*) Starvation and privation increase the number of deformed and feeble children, as seen in sieges. (Paris.)

(*c*) Toxæmia, especially that due to the carbon oxides, also in cholera, typhoid, etc.

(*d*) Endometritis and placentitis—starvation of fœtus. (See *Syphilis.*)

(*e*) Alteration of blood pressure in lower animals causes abortion.

(*f*) Strong mental impressions, such as anger, fright, disgust, pain, the so-called *maternal impressions*, which are claimed may produce mental and bodily defects in child. It is undoubtedly true that certain mental defects, as drunkenness, cruelty and nervous diseases, are transmitted from mother to child.

Cutaneous lesions, such as nævi, moles, scars, and markings are at times apparently attributable to maternal impressions.

Other prenatal defects, may with more probability be referred to either—

1. **Atavism,** or the reversion to a descendant of a peculiarity of some more or less remote ancestor.

2. **Interuterine traumatism,** such as falls, blows, kicks, stabs, or gun-shots, inflicted upon the mother, may produce the most varied accidents upon the child in utero. (See *Interuterine Amputations, Dislocations and Ankyloses.*)

(*a*) **Interuterine Dislocations** are more frequently observed in the lower than in the upper limbs. Guersant has reported congenital dislocations of the hip, knee, patella, humerus and inferior maxillary, 13 varieties in all.

(*b*) **Interuterine, or Congenital Club-foot.**—Talipes

varus, equino-varus, etc., when not associated with spina bifida, are usually amenable to treatment, and the earlier the better, by adhesive straps, etc.

Congenital club-foot is usually talipes varus or equino-varus. In its pathology it resembles very closely, or is identical with, infantile spinal paralysis. There is more or less paresis or actual paralysis of certain muscles, and tonic spasm contraction of their opponents.

Treatment.—Bandages, apparatus or operation—removal of astragalus—according to length of time deformity existed previous to birth. (T. G. Morton.)

(*c*) **Interuterine Amputations** are supposed to be caused by amniotic lymph bands, which have been known to sever, in utero, legs, arms, hands, fingers or toes.

Cases.—Dr. Montgomery reports one of a five months fœtus, with each hand and ankle thus encircled, deep grooves being found under each band.

Chausser describes three cases in which the parts were found lying in the membranes, and the stump perfectly healed.

(*d*) **Interuterine Fractures** are not infrequently reported, especially of the clavicle, long bones, ribs or skull. Epiphyseal separations before birth are by no means infrequent.

Other anatomical defects in the development of the fœtus, such as encephalocele, meningocele, hydrocephalus, spina bifida, exomphalus, talipes, harelip, microstoma, cleft palate, macrostoma, absence of tongue, multiple kidney, adhesio linguæ, floating kidney, tongue-tie, abscess of bladder, atrophy tongue, fistula congenita colli, diverticular pouches, stricture œsophagus, stenosis œsophagus, etc., are discussed elsewhere in this book, under the various organs of which they constitute malformations.

Maternal Diseases; The bacterial—as a rule—fail to pass from mother to fœtus, but apparently this occasionally happens in—

Variola; well proven, though not invariably so.

Rubeola; rare, but known to have happened.

Scarlatina; few, but typical cases.

Erysipelas; probably so.

Malaria; Laveran's bodies found in blood of fœtus.

Septicæmia; in dispute.

Cholera; produces abortion.

Typhoid fever; produces abortion.

Recurrent fever; characteristic spirilla found in blood of fœtus.

Yellow fever; child exempt, if not aborted during fever.

Unfavorable paternal influence may be exerted upon the child from the father being either (*a*) too old, (*b*) too young, or (*c*) diseased, especially from drunkenness, for it is well established that children begotten during drunkenness are often idiots.

Fathers suffering from lead poisoning, chronic nephritis, cancer, diabetes, or phthisis, are, as a rule, unable to beget healthy offspring.

Syphilitic; (see *Syphilis.*)

SECTION III.

THE PHYSIOLOGICAL AND TRAUMATIC ACCIDENTS OF BIRTH.

The physiological accidents of birth arise from some failure in the necessary physiological changes occurring in the child's organism at time of birth. The more important of these changes are:—

First. The establishment of pulmonary respiration forces a stronger current of blood into the pulmonary artery than formerly, hence the blood is no longer to pass into the aorta by the duct—*ductus arteriosus Botalli.* This duct passes from the pulmonary artery, before it branches to the arch of the aorta, and is therefore a prenatal short cut for the blood, which before birth thus avoids the lungs, but whose expansion at the time of birth alters the position of this duct, and by bending it obliterates it entirely in the course of a few weeks.

Second. The accumulation of carbon dioxide in the blood of the newborn stimulates the respiratory movement and the expansion of the lungs. This exerts no inconsiderable pressure on the heart and blood-vessels of the thorax, whereby more blood is forced into the pulmonary artery, and relieves the pressure existing in the aortic system during the fœtal life. The most evident result of

this diminished pressure is found in the arteries of the umbilical cord, which cease to pulsate. The arteria umbilicales are the largest branches of the hypogastric arteries, being given off at the side of the bladder, and passing upward and outward of the umbilical ring into the cord and thence to the placenta. After the placenta is detached from the uterus, thrombi form in the umbilical arteries nearly up to their origin in the hypogastrics. These thrombi later become organized, and form, with the obliterated arteries, the lateral ligaments of the bladder.

Third. At the same time that the umbilical arteries become obliterated by the detachment of the placenta the umbilical vein is also deprived of the supply of blood which it previously carried through the umbilical ring to the liver, and through its anterior longitudinal fissure to the left end of its transverse fossa, where the umbilical vein divides *into two branches.* By one of these it sends the greater part of its blood into the left branch of the portal vein, by the other, under the name of the ductus venosus, it carries the remainder of the blood into the inferior vena cava. Both the duct and the umbilical vein are obliterated after their circulation is cut off; the latter becoming the ligamentum teres of the liver. As a result of the obliteration of the umbilical veins and the ductus venosus, the ramifications of the portal vein are filled with more blood in the same measure as the rapid flow into the vena cava inferior is checked through its former channels. If the portal capillaries have from any reason become weakened, they may give way, and we have hemorrhage into the intestines, or more rarely into the stomach. (See *Melæna neonatorum.*)

APNŒA NEONATORUM.

Synonym.—Physiological apnœa.

Differentiation.—Physiological apnœa is tardiness in beginning respiration, placental circulation persisting for some time after birth, and the cord pulsating for an undue length of time.

Etiology.—Failure of respiratory centres to promptly respond to their usual stimuli of cold, etc.

Prognosis.—Hopeless, if persistent.

Treatment.—(See *Asphyxia Neonatorum.*)

ASPHYXIA NEONATORUM.

Synonyms.—Asphyxia pallida neurosa, asphyxie des nouveau-nés, apparent death of the newborn. Literally, a pulseless condition of the newborn.

Etiology.—Ante-partum, most frequently due to mechanical interference with the circulation of the oxygenated blood, which may be due either to

(*a*) Disturbance of the maternal circulation, *e.g.*, flooding.

(*b*) Disturbance of the placental circulation, *e.g.*, premature detachment.

(*c*) Disturbance of the fœtal circulation, chiefly from pressure on the cord, as in prolapse, breech presentation, cord about the neck.

(*d*) Premature stimulation of the respiratory centres, due either to direct pressure, or from the accumulation of carbonic oxide in the blood. The first effect of this is stimulant upon the respiratory centres, and hence premature respiration, which may draw into the child's trachea mucus, blood, meconium, etc., according to its location, producing mechanically asphyxia.

(*e*) Abolition of respiratory irritability (Schultze) due to premature birth, the original feebleness of the child or disease of the mother.

Pathological Anatomy.—Dark, liquid blood, engorged internal organs, hemorrhage into serous membranes, intestinal hemorrhage, presence of meconium, mucus and amniotic fluid p. r. n. in the respiratory tract. The most frequent location of hemorrhage is the meningeal surfaces, especially towards the posterior lobes of the cerebrum, around the cerebellum and in the spinal dura mater.

Symptoms depend upon the amount and duration of the pressure upon the cord; if slight the child is simply pale and anæmic, the limbs relaxed and heart sounds are feeble. If premature respiration has occurred, we may find artificial asphyxia added, from the inspiration of foreign matters into the mouth, pharynx and trachea. Frequently divided into asphyxia livida and asphyxia pallida, which may thus be differentiated:—

In asphyxia livida, we have cyanosis, injected conjunctivæ, pro-

tuberant eyes, strong cardiac action, slow, full pulse; cutaneous sensation; tense musculature, umbilical pulse, intermittent respirations.

In asphyxia pallida we find death-like paleness, relaxation, minimum heart beat; no umbilical pulsation; diaphragmatic respiration poorly established; sphincter paralysis; conjunctival and cutaneous insensibility.

After a longer or shorter time in either variety, gasping respiration may begin and gradually become more regular, and the heart action stronger, or the contrary may occur.

Prognosis.—According to Bouchut, if careful auscultation for five minutes fails to reveal any heart sounds, the case is hopeless; otherwise persevere so long as any action of the heart can be detected, though the duration and degree of the compression endured determines the danger of the asphyxia. It must also be remembered that even when life is preserved, there is subsequent danger from pneumonia and cerebral compression, which may produce permanent paralysis or idiocy.

Prophylaxis, whenever possible, should be attempted, especially in breech presentations and prolapse of the cord, by methods described in the standard text-books on obstetrics.

Therapy.—Where there has been premature inspiration, remove all foreign substances from the mouth and trachea, if necessary, by inspiration through a flexible catheter thrust into the windpipe.

2. Stimulate respiration by slapping the child's back and buttocks, or sprinkling it alternately with hot and cold water, or immersing in hot and cold baths alternately. The inhalation of brandy, ammonia or Hoffmann's anodyne. Electrical stimulation, if possible.

3. So long as any motion of the heart can be detected, artificial respiration should be persisted in by means of either Marshall Hall's, Schultz's or Bird's method, at the rate of not more than sixteen forced respirations a minute.

The writer's preference is for Bird's method, which consists in holding the child on the outspread palms, one under the buttocks, the other behind the head and neck, which are supported between the thumb and second finger. By everting the palms the child's

chest is expanded, and by bringing the hands toward each other the air is expelled from the lungs, and the process repeated as often as is necessary.

ATELECTASIS PULMONUM.

Synonyms.—Congenital fœtal lung, congenital atelectasis, unexpanded lung.

Definition.—A partial persistence of the fœtal condition of the lung after birth.

Etiology.—Any cause which interferes with the initial expansion of the fœtal lung. Chief among these may be mentioned asphyxia, accompanied as it frequently is with greater or less paralysis of the respiratory centres. Pressure on the brain may do the same, or premature birth, in consequence of the inspiratory muscles being too feeble to elevate the thorax during inspiration.

Pathological Anatomy.—Unexpanded portions, chiefly at posterior and inferior borders of the lower lobes, and along the free margins of the lungs, which here appear depressed below normal level; reddish brown, bluish or steel blue. These spots sink readily in water and show a granular surface from which exudes a bloody fluid without air bubbles.

Symptoms and Course.—Such children have a weak, whimpering voice, are often distinctly cyanotic, nurse with difficulty, sleep much and are prone to die of collapse. Breathing is rapid and superficial; the pupils are dilated and react feebly.

Prognosis is generally unfavorable, death occurring after collapse, in the course of a few days. Occasionally convulsions precede death.

Treatment and Prophylaxis.—Whenever atelectasis is feared the child should be encouraged to cry vigorously in order to produce deep inspirations. The respiratory muscles should be stimulated by counter-irritation, electricity, change of position, etc. Bodily warmth must be preserved by the use of warm baths, flannels, hot bottles, etc.

CYANOSIS.

Synonyms.—Morbus Cæruleus. The Blue Disease.

Definition.—Name given to various lesions in which a prominent symptom is a failure to properly aerate the blood in its passage through the lungs.

History and Etiology.—In the middle ages it was supposed to be due to the work of malevolent spirits. To-day it is not usually considered a disease, but a symptom of various cardiac and pulmonary lesions, which interfere with the proper aeration of the blood. In more than half of the cases examined after death malformations have been found in the pulmonary artery. Others arise from the mixing of arterial and venous blood in the heart, due to congenital defects, and others to a congenital failure of oxygenation of the blood without recognizable lesions.

Occurrence and Pathology.—(See *Cardiac malformations.*) No accurate chemical examination of the blood of cyanotic children has yet been made, but it probably closely resembles ordinary venous blood. The liver is usually enlarged and congested; pericardial and pleuritic effusions are frequent occurrences. More frequent with males than females, and increases in frequency with bulk of population. Often hereditary in families, but, even when due to congenital malformation, symptoms do not necessarily occur immediately after birth.

Symptoms are chiefly those of blueness or lividity of the face, lips and tips of the fingers, intensified by exertion or fright, which occasion paroxysms of dyspnœa.

Prognosis.—Unfavorable for recovery, though not immediately so, for life may be prolonged for years.

Treatment.—Rest, mental and physical, digitalis, quebracho and chlorate of potash and tonics.

MORBUS WINCKELII.

Definition.—An epidemic form of cyanosis has been described by Winckel in 1879, under the name of *cyanosis afebrilis*, or as it is generally called Morbus Winckelii, because of an epidemic in

the Dresden hospital, first described by the above. Out of twenty-four children attacked, but one lived. Mortality 95.8 per cent.

Etiology.—Garrod, Bigelow and others (Epstein of the Prague Foundling Home) had before Winckel reported sporadic cases, and Baginsky two years ago had a similar case. But the etiology has entirely escaped all these observers, for of all these children, 75 per cent. were nursed by healthy mothers. Poisoning by metals, phosphorus and carbolic acid were excluded.

Pathological Anatomy.—Cyanosis and icterus of external and internal organs, with redness and swelling of buccal and pharyngeal mucous membrane, flatulent swelling of the stomach, with velvet-like loosening of its mucous membrane, often ecchymotic. Same condition of the duodenum, jejunum and ileum, and internal organs. Gall passages pervious, liver enlarged, marbled yellow, subscapular ecchymoses, rare, fatty infiltration of cells. Gall dark. Spleen more consistent, heavy and large. Cortex of kidney enlarged, dark. Hæmoglobin infarcts in apices of papillæ. Urine cloudy, dark to dark brownish green, with absence of gall pigments. Presence of uric acid, ammonia salts and brownish amorphous masses.

Symptoms and Course.—The disease begins with restlessness, moaning, anorexia, followed by icterus of the skin, which is also cool.

Diarrhœa and vomiting rare. Stools ochre-yellow or brown.

Respiration accelerated; heart sounds normal. Passages black-brownish, and of almost syrupy consistence. The disease runs a rapid course, with a fatal termination in from a few hours to three or four days, at most.

Prognosis.—Very bad—95 per cent. fatal.

Therapy.—None successful.

APOPLEXIA NEONATORUM.

Synonyms.—Cerebral, or meningeal hemorrhage, asphyxia rubra seu apoplectica, hyperæmia cerebri traumatica.

Definition.—Loosely used to cover all degrees of increased cerebral blood pressure up to actual apoplexy, or rupture of the vessels of the brain.

Etiology.—Caused by pressure during birth, arising from disproportion between the size of the child's head and that of the bony parts of the mother, with the resulting tedious labor, displacement of the bones of the cranium, and resulting hyperæmia.

Pathology.—Hyperæmia of the entire head, passing into true capillary hemorrhage, or larger effusions, even to a rupture of the cerebral sinuses with profuse hemorrhage.

Symptoms and Course.—Child usually well nourished, but born highly cyanosed; the eyeballs often projecting and ecchymosed, tongue protruded and swollen, and the head showing a caput succedaneum. The heart's action is weak and irregular. If the effusion is great and located at the base of the brain, the child dies from gradual cessation of the heart's action, with irregular respiration. Or if the effusion is smaller in amount, the child, which at first breathed only at long intervals, may begin more frequent respirations and gradually recover, especially if the effusion has taken place on the convexity of the brain, or if there has been only a high degree of hyperæmia without actual rupture.

On the other hand, convulsions, spasm of the facial muscles, or of the extremities (see *Spastic Hemiplegia*), are among possible complications or sequelæ. Death usually occurs from collapse without convulsions.

Prognosis depends upon the amount and location of the effusion, and whether it increases, or begins to be absorbed after birth, but the outlook is rarely entirely favorable, even when apparent recovery takes place, for the child is very liable to be left with some defect of speech or mind.

Prophylaxis belongs properly more to obstetrics than to pædiatrics.

Treatment.—If the child is born cyanosed, cut cord at once, and allow one or two teaspoonfuls of blood to escape, or until the face begins to pale.

2. Endeavor to excite reflexly the medulla by stimulation of the skin, or sprinkling the face and breast with cold water.

3. Counteract the morbid condition of the brain as far as possible by artificial respirations, by any method given previously.

INFANTILE SPASTIC HEMIPLEGIA.

Definition.—Unilateral paralysis with contractions, due to cerebral hemorrhage at time of birth.

Occurrence.—Comparatively infrequent, because usually one of the untoward sequelæ of a breech presentation.

Etiology.—Results from localized atrophy of the cortex, due to the pressure of a blood clot at that point. Dr. McNutt's post-mortems demonstrate that hemorrhage on the convexity of the brain gives rise to paralysis without convulsions; but that vertex presentations are more liable to produce hemorrhage at base of the brain, convulsions, no paralysis, and ordinarily a shorter duration of life.

Pathological Anatomy.—Clot, or its remnants with hæmatoidal crystals, can usually be found in fissure of Rolando, paracentral lobe or upper part of frontal convolutions. (McNutt.)

Symptoms.—Often initial fever, followed by paralysis with flexion, pronation, etc., with wasting of the affected side. Such children are apt to be passionate and ill tempered, though sometimes they are dull, aphasic, or stammering in the speech.

Prognosis.—Not necessarily hopeless.

Treatment.—Passive exercise and massage to prevent wasting of muscles, galvanization, cold douches, with the internal use of potass. iodide and ergot. Deformity apparatus and tenotomy if required.

APOPLEXY OF THE LUNGS.

Occurrence.—One of the rarest accidents at the time of birth, but such cases have been reported by Loomis, Jacobi and Walsh.

Symptoms.—Nothing abnormal for some hours after birth, then groaning and short spasmodic respiration, with capillary congestion of the extremities, lips dusky, and death from collapse.

Pathological Anatomy.—Effusion of blood into pleural cavity, associated with general pulmonary congestion and interlobular hemorrhage, due probably to fatty degeneration of the vessels.

Differentiation.—Probably not possible during life. Should not be confounded at autopsy with the punctate ecchymoses of the

pleura and hepatic peritoneum found in most children dying within three or four days after birth.

Treatment.—Ergot and heat to the extremities.

Prognosis.—Most gloomy.

MELÆNA NEONATORUM.

Definition.—Gastric or intestinal hemorrhage in the newborn.

Occurrence.—Not very infrequent; occurs from first to third day.

Etiology.—Congenital fragility of the vessels of the stomach, which give way under the increased pressure thrown upon them by tying the cord and the obliteration of the ductus venosus. (See page 20.)

Symptoms.—Vomiting and purging of blood, progressive weakness, and death from collapse, unless hemorrhage is checked. When blood is not vomited, its presence may be detected in the feces by placing them in cold water, which is colored red by blood, but olive green by normal meconium. Blood swallowed from cracked nipples produces vomiting, but not the collapse of melæna.

Prognosis.—Not necessarily unfavorable, unless arising from congenital hæmophilia. Usually lasts from one to five days.

Treatment.—Ergot and cracked ice internally.

OPHTHALMIA NEONATORUM.

Synonyms.—Conjunctivitis blennorrhœa; ophthalmic blennorrhœa; augentripper der neugebornen; purulent ophthalmia, infectious conjunctivitis of the newborn; blennorrhœa neonatorum.

Definition.—A specific inflammation of the oculo-palpebral conjunctiva, occurring shortly after birth (one to seven days). It generally implicates, sooner or later, both eyes, which discharge a copious, contagious pus, which destroys the cornea, if neglected.

Etiology.—Chiefly, if not solely, from infection with leucorrhœal or gonorrhœal vaginal secretions at time of birth. This is ordinarily prevented by the adhesion of the eyelids and their covering of vernix caseosa; but the child may open its eyes before

birth and thus become infected. May also occur from the lochia, or from infection through uncleanliness on the part of the mother or nurse. At least this is the probable explanation of those cases occurring as late as the eighth day.

The foul air of foundlings' homes and asylums often keep the disease epidemic there, especially during the prevalence of puerperal fever; though possibly here foul sponges and hands have as much to do with it as the air.

Pathology and Pathological Anatomy are those of a septic inflammation of the conjunctiva and parenchyma of the eyeball and lids.

First Stage (twelve to twenty-four hours); characterized by a prodromal red line transversely marked on the lids, as if penciled with carmine ink; purulent injection of the conjunctivæ, which are slightly œdematous, and very photophobic. This stage, untreated, passes rapidly into the second stage.

Second Stage; that of general œdema of the conjunctivæ and lids, accompanied by a thin, purulent secretion, very profuse and irritating in character. If unchecked the natural course of this is to the destructive

Third Stage; marked by prodigious swelling of the lids, maceration and destruction of the conjunctivæ by the profuse mucopurulent, septic discharge. The cornea is the part most frequently ulcerated, and the process is attended with fever and pain; or the pathological processes may not reach this final point, but stop anywhere in the above description, reaching a subacute condition, which may persist for months, and often results in general hypertrophy of the papillæ of the lids, forming cockscomb-like bands in the vicinity of the canthi, with thickening of the lids.

Course and Symptoms are very variable, for the disease may proceed to gangrene in a few hours, or persist for months as a subacute inflammation. The complications most frequently met with are ectropion, ulceration and abscess of the cornea, conical cornea, hernia of the iris, rupture of the cornea, capsular cataract, staphyloma, leucoma, or total loss of the eye in the worst cases, and even in the more favorable, corneal opacities are very frequent.

Differentiation between this and simple catarrhal ophthalmia is made chiefly by the virulence and rapid course of the first.

Prognosis is good only so long as the cornea remains intact. The earlier the cornea is involved the worse is the prognosis, because the sequelæ of inflammation of the cornea (white cicatrices, etc.) persist for life, and are the most frequent cause of infantile blindness. According to statistics (in 1876) 33 per cent. of all the children admitted into the blind asylums of Austria and Germany had become blind from this affection. Nevertheless, the prospects of recovery are generally favorable, if unremitting care is given the child, either by the doctor or a competent nurse.

Treatment.—The most essential part of any efficient method of treating this disease is frequent and thorough cleansing of the eye with some weak antiseptic solution, carefully protecting the other eye from infection. Some advise the use of ice bags during the intervals of cleansing, but frequent antiseptic cleansing is more important than the choice of the germicide or antiphlogistic.

Corrosive Sublimate (gr. j–ʒviij). Highly recommended by Smith.

Nitrate of Silver (gr. ss.–v–ʒj). Largely used by some, after previously thoroughly cleansing the eye with a 2 per cent. solution of boracic acid.

Alum (gr. v–ʒj) is preferred by others, while zinc sulphate (gr. ij–ʒj) is often employed by others. As is also a solution of borax, of almost any strength.

Zinc chloride (gr. j–Oj) has given excellent results in the editor's hands when used hourly, or oftener, if necessary.

Solution of hydrogen peroxide, theoretically, is the best antiseptic for this purpose, but as found in the market is apt to prove irritating when used in full strength and inefficient if largely diluted.

Prophylaxis.—*Credé* has obtained most remarkable results by the use of a 2 per cent. solution of nitrate of silver, applied to the eyes with a glass rod immediately after birth, by which means this disease has disappeared from the Leipzig hospitals, and nearly so in all the Austrian hospitals. Gaunt advises zinc chloride. In every suspicious case the vagina and external parts of the mother should be scrupulously cleansed, before and during her confinements, with a bichloride (1–5000) or carbolic acid solution.

Moreover, if one eye becomes infected, the other must be protected from contagion by borated cotton laid over it and held in

place by adhesive plaster, and the eye examined carefully at least twice a day. Nurses and other children are, of course, liable to infection by towels or instruments, if not immediately disinfected.

ICTERUS NEONATORUM.

Synonyms.—Gelbsucht; infantile jaundice; icteritia (Underwood); yellow goom; ictere.

Definition.—Yellow discoloration of the skin of the newborn, occurring from the third to seventh day.

Etiology.—According to Goodhart may be either physiological or morbid. The first is due to an alteration in the circulation of the blood pressure, caused by the act of birth. It is largely due to changes taking place in a congested skin; is more frequent in premature infants and does not stain the conjunctiva and urine yellow while the feces retain their natural color. More or less of this discoloration of the skin is observed in all newborn children; but staining of the sclerotics is due to reabsorption of the coloring matter of the bile, due to either catarrhal or pernicious jaundice.

Ordinary icterus neonatorum is due to mechanical rather than hæmatogenic causes; because if due to destruction of red corpuscles their number ought to be relatively lessened, but careful counting shows this is not the case. (*Phil. Med. Times*, Vol. XIV, p. 124.)

The reason why infantile jaundice does not invariably occur, is that the amount of interference by the umbilical ligature depends upon the amount of anastomosis of the umbilical vein with veins of abdominal wall, and the relative vigor of cardiac contractions, for the freer these anastomoses the less resorption of bile.

Catarrhal jaundice is due to a simple catarrh of the ducts. Pernicious jaundice arises from defective circulation in the liver, such as might be caused by congenital hepatitis or malformations. Such causes are hepatitis syphilitica, closure of the ductus choledochus by gall stones or phlebitis umbilicalis. It is also met with in pyæmia from any cause, scarlatina, pneumonia, atelectasis of the lungs on account of a damming up of the blood in the liver from an imperfect emptying of the heart, etc.

Prognosis is generally good, unless the jaundice is due to

some congenital malformation, such as syphilitic thickening of the ducts or that arising from pyæmia, especially that originating from septic omphalitis. Nunnelly records a case, however, of a child who lived for nearly seven months with congenital obliteration of the hepatic ducts. Death in these cases usually results from gradual wasting and exhaustion; more infrequently due to hemorrhage from the umbilical vessels.

Course and Treatment.—Catarrhal jaundice lasts from one to two weeks, and has a spontaneous cure, provided serious mistakes in diet are avoided. Pernicious icterus is generally unsuccessfully treated, ending fatally, with rapid atrophy and the appearance of hemorrhagic petechiæ and brain complications, in about two weeks. In umbilical phlebitis antiseptics are to be applied to the navel, and quinine and sulphate of magnesia tried.

SEPTIC INFECTION OF THE NEWBORN

Etiology.—Septic infection may be either ante- or post-partum, and like other septic poisoning may variously locate itself in the child's body, appearing either as erysipelas, phlegmon, joint disease, pneumonia, endocarditis or peritonitis. These morbid processes being explained according to modern theories by bacterial invasion, or poisoning from their products.

Pathological Anatomy depends upon the part affected. In interuterine sepsis the child's body may show macerated skin, bloody effusion into the cavities of the body, petechiæ in the lungs, pericardium and pleura, ecchymoses on the peritoneum, and generally fatty degeneration of the internal organs. Should the child be born alive, it may die in a few days from fatty degeneration of the liver, or interstitial pneumonia. Very often the septic process begins in the subperitoneal connective tissue surrounding the vessels of the navel, with thrombosis and peritonitis. In others, the mucous membrane is the first affected, with ulceration of the mouth, pharynx, or intestinal canal; again it manifests itself in localized gangrene of the skin and subcutaneous tissues, or affections of the joints, or hemorrhage into the brain, liver or kidneys, or as septic pneumonia, pleuritis or meningitis.

Symptoms and Course are naturally those which belong to

the diseases mentioned above. In addition multiple abscesses and sloughing of the subcutaneous tissue are frequent, from extensive burrowing of pus. Suppuration of the joints is by no means infrequent, resulting in separation of the epiphyses and deformity, though not necessarily so. Among other symptoms may appear various diseases of the navel (which see), otitis, erysipelas, dermatitis exfoliata and septic croup. The general condition of the child is poor. It is emaciated and has high fever, anorexia, diarrhœa, prostration and early death from exhaustion, pleurisy or pneumonia.

Differential Diagnosis is not difficult, although it is not always easy to settle the source of the septic infection, even after the cutaneous affections, stomatitis, otitis or joint affections clearly indicate the nature of the disease.

Prognosis.—In general bad, especially so with bottle-fed babies; others may recover even after extensive arthritis. The mortality in epidemics is higher than in sporadic cases.

Treatment.—Chiefly in the way of prophylaxis during pregnancy and parturition, especially during epidemics of puerperal fever, when the child should be removed from the breast. (Baginsky.)

Strict antisepsis should be observed in dressing all septic wounds or those liable to become so. Boracic, or salicylic acid, thymol or iodoform are preferable to carbolic acid for use with children. For treatment of *Erysipelas* see later.

ACUTE FATTY DEGENERATION OF THE NEWBORN.

Etiology.—Bad condition of the mother. Boys are attacked twice as often as girls. The infection apparently occurs in the last portion of pregnancy.

Symptoms.—Generally during the first days of life up to the sixth, or more rarely after a few weeks, hemorrhages occur from the navel or the intestines (see *Melæna*), or into the skin or mucous membranes. Such children become pale, and jaundiced, and sometimes anasarca appears. An autopsy discloses acute fatty degeneration of the muscles of the heart, liver and kidneys, and from thence fatty emboli pass to the lungs.

Prognosis. Bad. From hemorrhage from the navel alone eighty-five per cent. of the children die.

Treatment.—Checking any hemorrhages. Cold applications upon the abdomen ; warm wrappings of the extremities, and when there is great anæmia, wine, etc.

ERYSIPELAS NEONATORUM.

Synonyms.—St. Anthony's fire; Rose; literally the red skin.

Definition.—Differs in no wise from that seen in adults, in appearance. Some think it a systemic disease with local manifestations, like diphtheria, others a specific dermatitis.

Occurrence.—Comparatively infrequent since greater care and cleanliness in lying-in asylums, etc. Quite infrequent in private American families, unless unfavorably located, as bed over sewer, as noted in a case of the author.

Symptoms.—Those of ordinary erysipelas except a more rapid course than with adults. Attacks umbilicus, genitals, neck, nates, legs, thigh, arm, and face. Migratory often. Peculiar features found only in children under one year. (Atkinson.)

Etiology.—Still in dispute but evidently a filth disease, associated with puerperal fever, etc.; probably due to a micrococcus. Or, strictly speaking, a specific dermatitis due to a specific organism, the streptococcus erysipelatis. (Fehlman.)

Symptoms and Course.—May proceed to abscess, sloughing, gangrene, and death from pyæmia. Or there may be tedious recovery, with cellular induration, or it may be complicated with peritonitis, pleuritis, pericarditis or meningitis.

Prognosis.—Discouraging, though all do not die. Earlier age more unfavorable, very fatal below three weeks.

Prophylaxis.—Strict cleanliness, care of the navel, especially in suspected sepsis.

Treatment (*Local*). Largely consists in exclusion of the air by means of cotton, wool, white paint, collodion, turpentine, etc. Hydrogen peroxide, theoretically, best; tinct: benzoin favorably spoken of, also hot lead-water and opium, or—

(1)

℞. Acid. carbolici . . . . . gr. xij
Oleic acid . . . . . ʒij.
To be applied with the finger.

Wheat flour or corn-starch freely dusted over redness.

Internal. Free use of alcohol and tincture of chloride of iron, gtt. ij–v in glycerine, good food and strict cleanliness.

Differential Diagnosis.—Sclerema might be mistaken for cellular induration of erysipelas, but former shows skin from first white and cold, with diminished sensibility.

TETANUS NEONATORUM.

Synonyms.—Trismus neonatorum; mundsperre; starrkrampf; lockjaw; nine days fits.

Definition.—Tonic spasm of the masseters and other muscles of the infant.

Etiology.—The tetanus of the newborn has generally a traumatic origin, such as the compression of the fine cutaneous nerves by the cicatrix of the navel or after a circumcision wound. These are the most efficient causes, but it may also arise from high degree of heat, as too warm baths, hot climates, or bad air, as from the whale-oil smoke in the huts of Iceland.

Symptoms.—Premonitory. For one or two days there may be noticed uneasiness, sudden starting during sleep, and fever. (4–14 days); next follows, as the first pathognomonic sign, inability to hold the nipple, then difficulty in swallowing, and quickly thereafter rigidity of the lower jaw (trismus), and stiffness of the neck (tetanus). At the same time or somewhat later the facial nerve and the muscles connected with it are implicated, and hence result wrinkling of the skin, closing of the eyes, and pursing of the mouth. Generally this condition quickly extends over the whole body, so that the back and extremities become stiff and wooden, and the abdominal walls hard and tense. The pulse and respiration are frequent and the temperature of the skin is markedly increased (105–111 F.), (40.9–44 C.), and this may even increase after death, because the rigidity of the muscles also persists for a while, and every contraction of the same produces a certain degree of heat.

Course.—Is not uniform, occasional hopeful remissions taking place, but as a rule the tonic spasms recur with greater frequency and intensity. Sometimes these paroxysms diminish in frequency just before death, which takes place on the fifth to ninth day of the disease, from exhaustion or asphyxia due to a spasmodic closure

of the glottis. Very rarely the temperature falls after a brief elevation, and when it remains so there is hope of recovery.

Autopsies have revealed the umbilical fossa lined with suppurating membrane and vessels still patent. Peritoneum inflamed and cellular tissue saturated with yellowish fluid. Billard reports meningeal apoplexy and thick follicular exudation on spinal arachnoid.

Prognosis.—Bad. The older the child, the lower the temperature, and the longer the duration of the disease, the better the prognosis. The later the onset, the more hopeful the prognosis. (Jacobi.)

Treatment.—Furlong advises laudanum, others chloroform, for spasms. Best results obtained by stimulation and good nourishment, milk, egg enemata, etc. Hypodermics of woorara, or extract of Calabar bean, are highly recommended. Think favorably of chloral hydrate, but, like chloroform, will relieve spasms, but will not cure. Merriweather applies blister to umbilicus. Turpentine has high reputation in Southern States as a local application.

Prophylaxis.—Pregnant women must not be delivered where disease is endemic, nor child return home until navel is entirely healed under antiseptic dressings, best of which is iodoform. The temperature of the bathing water ought not to be over 34°–35° C., 100° F.

SCLEREMA NEONATORUM CONGENITUM.

Definition.—Consists of a hardening of the skin and subcutaneous cellular tissue, accompanied with a decrease in the warmth of the body.

Etiology.—This constitutional disease—sometimes congenital—attacks premature and atrophic children who are compelled to live in the bad air of overcrowded foundling asylums in large cities. The sinking of the temperature of the body (in consequence of its imperfect calorification) is probably primary, and the stiffening of subcutaneous adipose tissue and the other symptoms are secondary.

Symptoms.—Acute œdema of the skin begins after an indefinite period of premonitory symptoms—somnolence, apathy, difficulty in nursing—in the most exposed parts, *i. e.*, the face and

lower extremities, beginning generally in the calves, when the disease spreads upward or downward. The skin attacked becomes pale, hard, and generally swells considerably from secondary œdema (of the skin), while the skin which remains healthy appears cyanotic. Gradually the whole body becomes affected, and the children lie in bed, cold, stiff, yellow as beeswax, and with countenances so swollen as not to be recognizable. The temperature may fall 18° F. (10 C.), and not even intercurrent pneumonia, which frequently complicates, can bring it to a fever heat. Respiration is always laborious and superficial.

Progress.—The disease generally ends fatally within one to four days; very seldom is a cure effected. Recovery begins with respiration becoming freer, nursing easier, and the temperature rising. Then the swelling of the parts affected diminishes reversely as they are affected; but the skin remains cyanotic for a long while. Intercurrent pneumonia may also interfere with the efforts toward a cure, and death result in two to three weeks.

Autopsies demonstrate an abundant bloody œdema of the subcutaneous cellular tissue, which is often changed into gelatinous masses; moreover serious effusions into the pleura are possible.

Prognosis.—Nearly always fatal, only rarely a cure takes place.

Treatment.—Supply warmth by means of warm bottles, sandbags, massage, strong wine, camphor, musk, etc.

Good nourishment, as wet nurse, whose milk must be injected at first, or nourishing enemas.

CAPUT SUCCEDANEUM.

Synonyms.—Kopfgeschwulst; the supplementary head; spurious kephalo-hæmatoma.

Definition.—A sanguineous œdema of the skin and subcutaneous tissue of the presenting part in tedious labor.

Occurrence.—A common, but not constant, accident of slow births; so frequent that it may almost be considered physiological. Usually located on the upper and posterior parts of the parietals, more rarely on the occipital, and still more rarely on the frontal bones, or even on the breech.

Etiology.—The expulsive force of the uterus crowds the fœtus against the opposing structures with such force that where resistance is least a localized œdema is produced.

Pathological Anatomy.—A round, oval, or sometimes elongated swelling, usually one to three inches in its longest diameter, but at times large enough to greatly disfigure the head. Pits but does not fluctuate on pressure; often purplish, and may even become dotted with gangrenous spots, but usually disappears spontaneously in twenty-four to thirty-six hours.

Differentiation may be made by the disappearance of the caput succedaneum in twenty-four to thirty-six hours; other tumors of this kind are persistent, such as

Hernia cerebri, or encephalocele; in line of sutures and pulsates.

Hydromeningocele; grows tense with respiration or crying.

Cephalhæmatocele; communicates with sutures, and is diminished by cutting off blood therefrom.

Angiomata, or erectile tumors; change color on pressure, and change with circulation.

Hydrocephalus; entire shape of head is altered.

Pneumatocele; a rare form of gaseous tumor described by Dr. Thomas, of Tours.

Wens, or enlarged sebaceous cysts, are solid, and do not pit.

Hydatid and simple cysts; like all cysts, fluctuate. Hydatids diagnosed by microscope.

Prognosis.—Always favorable. Usually disappear in a few hours, even the largest only persisting for two or three days. In rare cases of breech presentation sloughing has been known to follow. (Parvin.)

Treatment.—The majority of cases need no treatment other than a little vaseline or cold cream. If the skin be broken dust with subnitrate of bismuth or impalpable boracic acid. If the swelling is very great the child may require feeding with a spoon for several days (face presentation), while the reduction of the swelling may be hastened by the application of cloths dipped in alcohol and water, or a solution of muriate of ammonia.

KEPHALHÆMATOMA.

Synonyms.—Cephalætoma (Naegele); thrombus neonatorum; ecchyoma cephalematome (Fr.); cephalophyma capitis; cefalematomo (Sp.).

Definition.—A hemispherical, elastic, fluctuating tumor of the hairy scalp, *increasing* in size after birth, and thus distinguished from the caput succedaneum or hernia cerebri. It may occur even in breech presentations. Rarely several are present at the same time.

Varieties.—Verum or subpericranial (located beneath the periosteum); spurium (the aponeurotic variety), "superiostique; meningeum (that of the dura mater) external and internal. (See *Apoplexy*.)

Etiology.—According to Naegele, often occurs before birth, due to an ecchymosis of the subpericranial tissue, due to a hemorrhage into cellular tissue and periosteum of the cranial bones, especially on the right side. As a rule, however, happens during birth. Occasionally, if a larger vessel has been injured, the effusion does not remain small, but assumes after birth larger dimensions, growing in a few days to a tumefaction which we designate as a true cephalhæmatoma, c. verum seu subpericranium, which is situated between the bone and the pericranium. More rarely there is a true hemorrhage between the aponeurosis of the occipito-frontalis and the pericranium, or laterally under the muscles, especially the temporal. Still more rarely, hemorrhage occurs between the bones and the dura mater on the inner surface of the cranium (c. meningeum s. dura matris), which can produce the symptoms of pressure on the brain. From what has been said it follows that any part of the cranium which has been subjected during labor to great compression, even if of short duration, can be the seat of a cephalhæmatoma, provided there exists at the same time a predisposition to fragility of the blood vessels of the periosteum. Consequently it need not be situated like the caput succedaneum on the presenting part of the cranium, though it is there in the majority of cases, and occasionally on the opposite side, viz., in breech presentations. The frequency of cephalhæmatoma is about one case to five hundred, or a thousand. Michaelis and Schmoltz call it very uncommon.

Course and Symptoms.—After birth the caput succedaneum often hides the deeper seated collection of blood, and only when the caput succedaneum is located elsewhere than the cephalhæmatoma do we find that it consists of a flat elevation. After the disappearance of the caput succedaneum (recovery, as a rule, in from ten to sixty hours) the cephalhæmatoma increases and appears as a permanent and generally constantly enlarging tumor, most frequently on one of the parietal bones. The tumor increases for from four to six days, but however large it grows it never overlaps the sutures, because it is situated between the bones and the pericranium, and the latter is strongly adherent to the edges of the sutures (the effusion beneath the aponeurosis, c. spurium, etc., is an exception, for this covers the sutures). If, at the same time, there are present the symptoms of pressure on the brain which do not disappear the first day, there is very probably a cephalhæmatoma meningeum, or a large and free extravasation of blood into the cavity of the cranium itself.

Prognosis.—Left to itself true cephalhæmatoma is not serious, remaining unchanged for only a few days after maturity. Absorption begins simultaneously with the formation of new bone, by the external border of the pericranium, which one feels as a bony ring at the base of the tumor. The tumor becomes more consistent and smaller because the fluid parts of the blood are absorbed, not because it coagulates, and in the most favorable cases disappears in from one to five months, leaving only a slight elevation of bone which is covered with movable scalp. More rarely it proceeds to suppuration, with or without the separation of sequestra from the skull, and much later purulent meningitis may be associated. Cephalhæmatoma meningeum generally ends fatally by pressure on the brain, convulsions, etc.

Treatment.—Every source of irritation is to be removed. Lanoline inunctions used daily, or after the hair has been shaved, a coating of collodion may be applied. Only when suppuration is feared is antiseptic incision indicated. Aspiration is preferred by Pinckney French.

HÆMATOCELE TRAUMATICA.

Synonym.—Bluterguss in die Scheidenhäute.

Definition.—Effusion of blood into the tunica vaginalis testis, produced by the long continued pressure of a tedious labor.

Symptoms.—A soft, doughy tumor located in the scrotum, not translucent to light, as is hydrocele, and not reducible, as in hernia.

Differential Diagnosis.—Œdema of the scrotum is more external and pits on pressure.

Varieties.—According to König (Kk. p. 242) there is a circumscribed hæmatocele funiculi spermatici, and a diffuse form which forms a tumor for the entire length of the extra-abdominal spermatic cord, and may even pass into the abdominal cavity.

Etiology.—Breech presentation pressure; really a form of hæmatoma.

Course.—Differs from ordinary œdema of the scrotum, in that only the cutis shrinks, and the testicles remain large and sensitive to touch, and secondary swelling of the skin follows, with fever and deep fluctuation, if the formation of pus takes place.

Occurrence.—According to Bókai the hæmatocele in the cavity of the tunica vaginalis testis is very seldom observed, except after operations for hydrocele.

Treatment.—Such effusions are always slowly absorbed, and should be treated mainly expectantly, but may be opened, with antiseptic precautions, and the blood-clot evacuated, if absorption cannot be obtained. The tunica should always be incised where there is any evidence of the formation of pus within it, and the cavity treated antiseptically.

WOUNDS OF THE FACE AND SCALP

Are not infrequently produced by the blades of the forceps. Such wounds are usually superficial, and heal rapidly under treatment with antiseptic powders (as bismuth and iodoform) or lotions. Punctured wounds have been made by an obstetrician attempting to puncture a caput succedaneum for tough membranes, and the eyelids and eyes themselves have been known to be injured by like brilliant operators.

PARALYSIS NERVI FACIALIS TRAUMATICA.

Synonyms.—Gesichtslähmung durch Zangerdruch; traumatic facial paralysis.

Etiology.—As its name implies, is due to the pressure of the forceps on the stylo-mastoid foramen in birth. It is always confined to one side, and usually cures itself in a few days. Wilson says always seen on right side, and may be permanent. For the symptoms of other paralyses of the facial nerve see *Peripheral Diseases of the Nervous System.*

Treatment.—None advised for a week; if persistent, then try faradaic or galvanic currents.

INFLAMMATORY PARALYSIS OF A STERNO-CLEIDO-MASTOID.

Synonyms.—Einseitige Kopfnickenlähmung; hæmatoma of the sterno-cleido mastoid muscle.

Symptoms.—Affects only one side, and is sometimes found after breech presentations on the side of the child which was nearest the mother's sacrum while passing through the pelvis. This side was subjected to a high degree of extension, which was shared by the sterno-cleido-mastoid, whereby perhaps some of its fibres may be torn. After birth the head inclines a little to the affected side, and the muscle is sensitive, perhaps inflamed, and appears thickened and rope-like. The same condition is said to have been noticed after both difficult and normal head presentations. It disappears spontaneously after a few weeks.

Treatment.—Iodine salve; rest.

FRACTURES AT BIRTH

Not only include those from direct violence to the humerus, clavicle, etc., from the hands and forceps of the obstetrician, but also the spontaneous fractures due to precipitate birth while mother is standing, or to extraordinary pressure upon the cranium in a very narrow pelvis.

Cranial fractures are generally incomplete, and are of the three so-called varieties:—

1. Fissures extending from the periphery of the bone to one of its points of ossification—often funnel shaped.

2. Grooves of the parietal, with or without fracture.

3. "Spoonbowl" depressions of the cranial bones, due to any prolonged pressure from the promontory of the sacrum. These are found either on the frontal or parietal bones, according to the presentation of the child, or in the form of deep depressions showing several fissures, or real fractures in the neighboring parts. These deep depressions are produced by the force of labor pains alone, as well as by the too forcible use of forceps, in difficult head or breech presentations. By the fall of a child from the genitals of a standing woman to the floor, the skull may suffer various fractures, but even here the fœtus shows how much it can stand, for it often escapes without damage. Fractures of the clavicle and humerus always result from force in breech presentations, where they sometimes occur in difficult delivery of the arm (*e. g.*, arm in the neck).

Prognosis.—Simple fissures and the gutter-like depressions of the cranial bones generally have no bad consequences, but the spoon-like depressions, on the contrary, generally end fatally in a short time, and even when the life of the child is preserved, brain or nervous diseases remain as sequelæ.

The fractures of the bones of the skull, from partus precipitatus while the mother is standing, are as often without evil results. Those cases which prove fatal, are so from apoplexy of the brain. Fractures of the clavicle and humerus are always without danger (though there may be apparent paralysis of the limb concerned).

Treatment.—In fractures of the skull, treatment for pressure of the brain is indicated. Fractures of the femur or humerus are to be kept replaced by means of pasteboard splints and light sticking plasters, or silicate dressings. Union without deformity in eight to ten days. Fractures of the clavicle heal spontaneously, if arm is kept extended.

Differentiation.—It should also be remembered that such a thing is possible, as an interuterine fracture, especially of the clavicle.

Such have been reported by Dr. Atkinson, of Philadelphia, Dr. Gurlt and Dr. Gross.

Complete ablation of a limb is also possible, as happened with an East Indian midwife in Dr. Scudder's practice.

DISLOCATIONS.

HIP. Are met with, and are due to direct violence (ignorance?) or are congenital. The latter are rare and affect chiefly the hip joints, and may be due to trauma *via* the abdomen of the mother or from violent uterine action with malposition of the child, especially if conjoined with malformation of the articulating surfaces. Dislocation here is usually upon the dorsum ilii, from shallowness of the acetabulum, which may be entirely absent.

Symptoms.—May escape notice until the child begins to try to walk, but might be suspected from abnormal width of pelvis and shortness of lower extremities. Child waddles like a duck when it attempts to walk.

Treatment.—Elastic band to keep trochanters in place, wheel crutch, and quiet as much as possible.

KNEE dislocations also reported, both complete and incomplete.

Treatment.—Reduction and splints, or tenotomy as practiced by Dr. Hamilton.

EXOMPHALUS.

Synonyms.—Hernia funiculi umbilicalis congenita; navelschnurbruch.

Pathological Anatomy.—Here, instead of cuticle surrounding the umbilicus, we see a thin membrane, the amnion or membrane covering the end of the umbilical cord. Within this loops of the small intestines, and sometimes also the liver, are found. After the sloughing off of the cord, the contents of the hernial sack are exposed. This, even in the slightest degree, constitutes the so-called amnion navel.

Etiology.—This condition arises from imperfect development of the abdominal plates, resulting in a central abdominal slit at the time of the separation of the intestinal and umbilical portions of the amnion. In consequence, the loop of ileum, which at first lies within the umbilical cord, is not withdrawn, but is developed there, either alone or in connection with the liver. These are covered

with the amniotic covering of the cord, and this amniotic sack is often ruptured during or prior to birth, such children being born dead or expiring very shortly after birth. If this is not the case, the coverings soon become gangrenous and fall off, and the exposed loops of intestine early share the same fate and prove rapidly fatal, through secondary peritonitis. Only very rarely, when the liver is contained within the sack, is a spontaneous cure possible by means of the formation of granulations by the peritoneal covering of the liver. Still more rarely does this take place with the intestine, thus closing the abdominal gap by the contraction of the cicatrix, if the protruding portion withdraws into the abdominal cavity.

Treatment.—1. Good nourishment by breast milk. 2. Local application of carbolated salve or other antiseptic dressings.

Successful case of operation and recovery by granulation under iodoform dressings, reported from Canada.

The *first dressing of the cord* belongs more properly to obstetrics, but it should be remembered that whatever method may be adopted for that purpose, the end to be obtained is the prevention of moist putrefaction, with its disagreeable odors and possible dangers of sepsis.

Desiccation of the Cord.

Clots forming and organizing in that portion of the umbilical cord which is left protruding from the navel ought to desiccate and drop off some time from the first to the ninth days (fourth to fifth, average) according to the amount of Whartonian jelly it contains. The star-shaped cicatrix left behind is called the gefässnabel by the Germans, and indicates the point of cicatrization of the umbilical vessels whose contraction pulls the scar downward toward the bladder. If the cord has been very rich in Whartonian jelly, it leaves a moist spot behind, surrounded by a reddish areola.

DISEASES OF THE NAVEL.

Failure of Cord to Desiccate.

Synonyms.—Unkindly separation of the funis (Underwood); Fleisch umbilicus; cutis umbilicus; carno luxurians.

History.—The normal desiccation of the cord is apparently due to a vital process analogous to torsion of the arteries, for if child dies these remain patulous and may be injected; but in a rare case detailed by Underwood, there was apparent persistence of vitality in a part between ligature and child for about three inches at first, which later diminished to half an inch.

Dr. Merriman, in commenting on case, considers it an aggravated case of fungus umbilicalis.

Omphalitis.

Synonyms.—Ulceration of the navel with or without proud flesh (carno luxurians); fungus umbilici; sarkomphalus; nabelschwamm; phlegmon del umbilici.

Etiology.—The umbilical cord, containing a large amount of Whartonian jelly, when it desiccates, leaves behind a moist spot. If improperly treated, either through uncleanliness or otherwise, this may extend into the umbilical folds until it becomes a true ulcer as large or larger than a nickel or quarter.

Complications in the shape of excoriation of the neighboring parts frequently occur, causing great inflammation and pain. Not unfrequently broad granulations spring up from the surface of the ulcer, forming the so-called fungus umbilicalis (carno luxurians), from the size of a pea to a bean.

Course.—If neglected, these ulcerations may proceed to perforation of the abdominal cavity, causing fatal peritonitis, or the granulations and surrounding parts may necrose and slough, though the usual result is recovery by cicatrization. Tendency to ulceration may remain for years.

Prophylaxis in these cases is fully as important as subsequent treatment, and consists *first* in proper treatment of cord after birth, viz: letting it alone except in assisting its desiccation with impalpable boracic acid or lycopodium on cotton. *Second*, careful examination of the navel after the separation of the cord and the cauterization, if necessary, of any unhealthy ulcerating spots as they may appear, with nitrate of silver.

Treatment consists of careful cleansing of parts surrounding the navel and packing the folds with iodoform and bismuth on cotton. The ulcerations and granulations must also be cleansed

and brushed with a solution of nitrate of silver (gr. x–℥j), and the surrounding inflamed parts may be covered with compresses soaked in a saturated solution of boracic acid or acetate of lead (1 : 48). Granulations may be snipped off with sharp scissors and the resulting hemorrhage checked with stick caustic.

Diphtheritic Omphalitis

Is also spoken of by Bouchut, but differs from the ordinary only in the fact that the surface of the ulceration is covered by a grayish diphtheritic membrane and surrounded by true erysipelas-phlyctenulæ, etc., and is considered a puerperal fever of the newborn.

Prognosis.—Very bad.

Treatment.—Coffee, wine, quinine, etc., and the local application of peroxide of hydrogen.

Phlebitis et Arteritis Umbilicalis.

Synonyms.—Umbilical phlebitis; arterite ombilicale.

Definition.—An inflammation of the arteries and veins of the umbilical stump, generally conjoined with omphalitis.

Etiology.—Originates from suppuration of the coagula which fill up that portion of the umbilical vessels within the abdominal parietes. Arteries often alone affected. Thirteen cases reported by Bouchut, chiefly in foundling and lying-in hospitals, illy-ventilated and infected.

Symptoms.—Often escapes the attention even of a trained physician, but may be *suspected when there is prolonged umbilical suppuration*, and when pressure over the track of the umbilical vessels crowds out a drop or two of pus. Generally there is also high fever and great restlessness, except of the abdominal muscles which are moved as little as possible. Sometimes also jaundice. (See *Pernicious Jaundice.*)

Complications.—Reabsorption of pus may be productive of pyæmia and peritonitis, or pleurisy and abscess of the liver occur, or death may occur from erysipelas.

Prognosis.—Death usually before the end of the third week, unless pus diminishes and repair by coagulation begins under proper treatment.

Treatment.—Great cleanliness and copious syringing with carbolized water, to be followed by the application of hydrogen peroxide. Good nourishment, and wet-nurse if necessary.

Gangræna Umbilici.

Synonym.—Brande des nabels.

Definition.—Omphalitis resulting in gangrene; a smeary, gray mass with a carrion-like odor, and vesicles of the cuticle.

Etiology.—Always preceded by ulceration or phlebitis, and especially frequent in the atrophic children of infected lying-in establishments.

Course.—Occasionally the line of demarcation forms, and the enclosed part sloughs away, leaving healthy granulations below, and the ulcer may heal by cicatrization. Generally death occurs in seven to fourteen days.

Complications.—If the urachus is patulous, instead of having been converted into the middle vesical ligament, the gangrene may attack it and a urinary fistula result. Or peritonitis may supervene, with or without suppuration, and in the former case it is possible to have the establishment of a fecal fistula, through which feces may pass via the umbilicus.

Treatment.—Prompt removal from the infected spot; wine, coffee, and wet-nurse, if required. Strictest cleanliness by means of washing, and the local use of disinfectants, as a solution of carbolic acid or permanganate of potassa (℥ss–Oj), hydrogen peroxide or iodoform powder dusted into the sloughing tissues.

Hernia Umbilicalis Acquisita.

Synonyms.—Acquired umbilical hernia; nabelringbruch.

Definition.—As the name implies, it is an acquired protrusion of the contents of the abdomen through the navel ring.

Etiology.—Occurs quite frequently, and is due to either an incomplete closure of the navel ring, from failure to cicatrize, or complete closure, which has been dilated by great meteorismus, impacted feces, continuous crying of atrophic children, or any other cause which produces sufficient abdominal pressure to crowd a loop of the small intestine and peritoneum against the umbilical ring, until it dilates.

Symptoms.—The true navel, expanding less than the integument, is generally found crowded over to one side of the abdominal tumor, which may be of the size of a cherry pit to a pigeon's egg. This may be reduced with a gurgling sound, while at the same time the edges of the hernial opening may be felt beneath the fingers.

Prognosis.—Usually recovery with an increase of the adipose tissue of the child. Occasionally it persists until adult life, and still more rarely in these cases does it result in incarceration of the intestine. Chiefly of importance as a complication in pregnancy in later life.

Treatment.—Reduce hernia, and apply over it a piece of flat cork, a little larger than the navel, kept in place by a strip of adhesive plaster with binder over all. Kormann advises, as good or better, the use of a long strip of adhesive plaster, passed around the back of the child, its ends crossing over the skin laid in a fold over the navel. To avoid the unpleasant abrasion of the skin from the irritation of the plaster, the child ought to be bathed, and the adhesive plaster renewed daily, for from three to six months.

SYNCOPE.

Definition.—Sudden loss of sensation and motion, with irregular heart's action and cerebral anæmia, from any cause, as laryngismus stridulus.

Symptoms, as given by Dewees, of exhaustion, paleness, loss of motion, etc., are evidently those of imperfect development and premature delivery (1 lb), or those of asphyxia from profuse hemorrhage; but he also notices cases where children, feeble when first born, but subsequently gaining strength, "suddenly (10th day) become pale, relaxed, and cold, with long intervals between each breathing, until at last respiration appears to stop, the fingers and hands turn blue or black, the lips livid, and the eyes fixed, the child presenting the image of death. After remaining in this condition for a short time, a slight convulsive movement will appear to play about the mouth, an imperfect inspiration will be taken, followed by an expiration attended with a peculiar noise (laryngismus); the lips become less livid as do the hands and the

nails, the eyes move languidly . . . an attempt to cry is made, but the sound is so feeble that it can only be heard at very short distance, and this finishes the paroxysm." Hey's case had eleven of these attacks in twenty-four hours, and yet recovered.

Etiology.—These cases are evidently those of cerebral anæmia, due to exhaustion or the spasms of laryngismus stridulus, which sometimes terminate fatally in these very young children.

Prognosis.—Dubious if complicated with laryngismus; hopeful if simply due to exhaustion.

Treatment.—The older writers report good results with whisky to the bowels, brandy or ammonia internally. Underwood recommends the fumes of tobacco as a last resort in persistent attacks, for in some valerian, chloroform and the other antispasmodics all fail.

MASTITIS.

Synonym.—Hexenmilch.

Definition.—An inflammation of the mammary glands occurring in both sexes in consequence of an accumulation of milk in them.

Etiology.—Compression or bruising of the glands distended by the milk which has deficiently flowed away, for it must be remembered that the mammary glands of boys, as well as girls, often secrete, during the first two weeks, a milky fluid which closely resembles colostrum, except that it is without its sweet taste—sufficient in one of the author's cases (male Jew) to trickle out by expression.

Progress.—The swelling and redness of the mammary gland seen at first either diminishes, or it may again increase, and after three to four days fluctuation will be felt until the abscess breaks and the skin heals, some time after. Only in wasted children erysipelas occurs, with deep sloughing of the cellular tissue—often a fatal termination.

Prognosis.—Generally good; only unfavorable with cachectic children. The worst sequelæ for girls is the destruction of a portion of the mammary gland and cicatrization of the abscess wound, very frequently resulting in a retracted or funnel-shaped nipple.

Prophylaxis.—Protection from pressure. When the swelling is not inflammatory, careful squeezing out of the milk.

Treatment.—(1) First promotion of resolution by means of warmth, lead wash, oil, etc. (2) When suppuration has commenced, applications of damp warmth, timely incisions (radiating from nipple), cleanliness, etc. (3) When there is cachexia, the use of a wet-nurse, wine, etc.

SECTION IV.

DISEASES ARISING FROM DISTURBANCES OF NUTRITION AND IMPROPER CARE OF THE CHILD IN ITS EARLIEST YEARS.

1. SIMPLE ATROPHY.

Synonyms.—Atrophia infantum; atrophy from insufficient nourishment; starvation; asthenia.

Definition.—Wasting of the tissues, due to food insufficient either in quantity or quality.

Occurrence.—"The commonest form of disease and the most frequent cause of death in infants." (Eustace Smith.) "Comparatively few children die from diseases directly interfering with the functions of the heart and lungs sufficiently to produce death; while multitudes die from failure to maintain the nutrition of the body sufficiently for the vital processes; really slow starvation, for there is *starvation* * * * whenever aliment is insufficient, either in quantity or quality, for repairing the losses which the blood sustains in supplying nutrition * * * starvation, hence oftener in disease than health, and disease often not so-called, but emaciation, febrile movements, falling temperature, wakefulness, feeble pulse, delirium, diarrhœa, etc., may only be starvation." (Flint, Sr.)

Symptoms.—These facts should always be borne in mind in

the treatment of all children's diseases since starvation is the most frequent complication. Symptoms vary somewhat, as starvation is simple or complicated with intestinal and other troubles; or as there is simple asthenia, or that with digestive troubles.

Simple atrophy is that arising from an insufficiency of food otherwise good. In such cases the infant gradually loses his plumpness, the fat slowly disappearing and the muscles growing very flaccid and soft. The face is pale and the lips thin. The child does not thrive and is peevish. It takes the breast ravenously, but not infrequently: if the milk is scanty the child suddenly stops and cries passionately, as if from vexation. Its skin is moist, and perspires readily and copiously, as does the rickety child. The fontanelle is level or depressed. If the child is generally sleepless and irritable at night, but sleeps at the breast, it is a sure sign that the milk is thin and serous.

During the day the child is very quiet and drowsy, or holds the thumbs in the mouth and sucks them until the skin about the nails becomes raw and abraded. The bowels are usually constipated, and the motions solid and well colored.

GASTRO-INTESTINAL ATROPHY is that due to irritation of the digestive organs from indigestible food placed there, and hence presents the above symptoms somewhat modified by the intestinal troubles. The child, as in the previous case, is dull, flabby and wasting, with moist skin and depressed fontanelle; but the skin is often slightly jaundiced for a few hours or days. The tongue is clean and moist, so long as there is no acute digestive disturbance; the bowels irregular and capricious, constipation alternating with diarrhœa. Ordinarily, the stools are hard, whitish and lumpy, consisting mainly of undigested food covered with stringy mucus. The passage of these lumps sometimes causes pain, straining and colic. Again, there may be three or four loose, slimy, greenish, offensive motions daily.

FLATULENCY is one of the child's most serious annoyances, with the usual symptoms of this affection. The evacuation of wind, or the passage upward of sour-smelling eructations, generally afford temporary relief. Such children are very irritable, from the pain being repeated at every meal, and especially annoying at night, when the child is apt to be feverish and seized with fits of scream-

ing. At such times the feet are cold, though the bowels, hands and cheeks are hot. The appetite, as in the former cases, is ravenous, the child eating everything that is offered it, but nevertheless the child continues to waste and suffer from various intercurrent ailments, such as nettle-rash, strophulus—red and white gum—thrush, "inward fits," diarrhœa, aphthæ, bronchitis, etc.

Treatment of Infantile Flatulency and Colic consists, first, in the immediate relief of its agonizing pain, and, secondly, in the removal of its cause, which usually must be sought for either in indigestion or malaria (on which see page 110). For immediate relief, any of the following will be found useful:—

(2)

℞. Spt. junip. compound, ... 10 c.c.
Glycerinæ, ... 5 c.c.
Aquæ anisi, ... 45 c.c. M.
SIG.—Teaspoonful in hot water, as required.—(H.)

(3)

℞. Sodii bicarb., ... gr. xvj
Syrupi simplicis, ... ℥ ss
Aquæ menth. pip., ... ℥ iss. M.
SIG.—Teaspoonful p. r. n. for a child a month old.—(STARR.)

(4)

℞. Pot. bromidi, ... gr. xvj
Chloral hydrat., ... gr. viij
Syrupi aur. cort., ... ℥ ss
Aquæ menth. pip., ... ℥ iss. M.
SIG.—℥ j pro dosi at one-half hour intervals.

(5)

℞. Liq. am. anisat., ... 4 c.c.
Spt. chloroformi, ... 1 c.c.
Elixir lactopeptin., ... 55 c.c. M.
SIG.—One-half teaspoonful to a teaspoonful every fifteen minutes.—(H.)

In obstinate cases hot fomentations or warm baths will be found useful, and if relief can be found in no other way, resort to opiates is justifiable, of which the pulv. cretæ aromat. cum opii ($\frac{1}{40}$ part opium) can be used *carefully*, with satisfactory results.

Acute Indigestion may produce alarming symptoms if food is allowed to accumulate in the bowels, especially if at the same

time the child has been exposed to cold. During such an attack, the skin becomes hot, the face flushed, and there is violent retching and vomiting of sour-smelling food and mucus mixed with more or less bile—yellow or green. The bowels are loose, often extremely so; motions dark-green or putty-like, passed with much straining and griping, sometimes so extreme that the child screams, pulls up the legs and rolls from side to side. The tongue is coated, the belly full and hard, and the child refuses food, but drinks greedily, and vomits soon after swallowing. Convulsions may also occur, sometimes frequent and fatal, but usually the vomiting ceases after the first day, or becomes very infrequent; but the diarrhœa is apt to persist, with watery, loose, and usually offensive stools.

Course, if neglected, is toward a frequent repetition of these attacks of acute indigestion, each one leaving the child a little more debilitated, until at last it passes into a condition of marasmus (see *Simple atrophy*, page 51), finally dying either from exhaustion or from some intercurrent disease which it has become too feeble to resist.

Prognosis depends entirely upon the physician's skill in the regulation of the child's diet and hygiene.

Aphorism X.—A child nursed for only a few months makes a better fight for life than one entirely bottle fed, which latter rarely survives more than three months, if fed on city milk.

Etiology and Treatment.—Success in treatment depends so largely on a correct knowledge of the etiology, that it is better that the two be discussed together. This really requires an accurate knowledge of what the infant's food should be, for we cannot be sure that it is deficient until we know what the normal food ought to contain.

Taking *Woman's Milk* as typical food, we find that it contains—

Water,	889.08
Sugar,	43.64
Casein,	39.24
Butter,	26.66
Salts,	1.38
	1000.00

Or in other words, the best food for the infant is that which contains about forty parts to the 1000 of sugar and casein each, and about a half of the same amount of fats, or butter, with a trace of inorganic salts well diluted with water.

Breast milk should be the best of all foods, but it is not always so, for it is often watery and innutritious, from improper food and neglect of herself, by the mother, although even then—

Aphorism XI.—"Any mother who refuses to try and nurse her child during the first two months of its life ought to be held with the doctor as particeps criminis in case of its death"—per contra.

Aphorism XII.—"Milk secreted in insufficient mammæ, by a woman not in full health, or by a very old woman, or by a very young woman, or by a woman very anæmic from prolonged convalescence, is incapable of properly nourishing a healthy child." In short, a wet-nurse is to be sought—

(1) When mother is unable to nourish child from lack of sufficient milk.

(2) When mother's milk is found habitually to disagree with child from persistence of colostrum, or other causes.

(3) When mother is syphilitic or consumptive.

(4) When nursing is found to permanently injure mother.

In the choice of a wet-nurse it is to be remembered that the best milk is not necessarily that from strong, muscular women, but more frequently from slight, fair complexioned women. An approximate estimate of the value of breast milk may be made by allowing it to stand in a graduated tube, and noting the proportions of cream that it contains, but the best criterion is the pleasure of the child in nursing, and its thriving upon the milk.

Substitutes for Mother's Milk.

Before Breast Milk appears, all sorts of substances have been used for feeding the hungry infant: *e. g.*, Kalmucks give it raw mutton to suck for the first few days; in Southern India it is fed upon boiled honey until the third day; in the Transvaal upon soft mush; in America, cracker-water and castor oil seem to be the favorites of the monthly nurse.

Aphorism XIII.—"Nature has provided a plenary abundance of food for the infant until the third day, and it is directly flying in-

to the face of Providence to fill the newborn child's stomach with saccharine mixtures, gruel or the milk of quadrupeds." (Meigs.)

Nevertheless, some infants are so supremely ignorant as to insist upon having something put into their stomachs before their mother's milk comes, and in such cases, after having in vain put the child to the mother's breast as soon as she is well rested, trial may be made of a little loaf sugar dissolved in warm water. If this fails to satisfy, try *A. V. Meigs' mixture.*

Substitute No. I.

2 tablespoonfuls of		lime water.
2	"	cream.
1	"	good milk.
3	"	milk-sugar water, prepared by dissolving 17¾ drachms of milk sugar in a pint of hot water. This mixture should be kept well corked in a cool place, and renewed as often as it grows turbid.

These eight tablespoonfuls are amply sufficient for one feeding, which should be given, blood warm, every two hours, if infant is awake.

II.

1 tablespoonful		cream.
2	"	of whey.
2	"	hot water.

The whey, of course, to be strained and the mixture given from a bottle, or one-third lime-water may be substituted for the whey, from six weeks to three months.

III.

Keating's Barley Blanc Mange.—℥ij–℥iv Robinson's prepared barley flour to Oj boiling milk; stir for twenty minutes at a boil, sweeten, allow to cool and solidify. ℥iv of this is heated and given in a bottle.

IV.

M. P. Jacobi's.—2 tablespoonfuls pearl barley to Ojss water; boil off one-third and dilute aa with good milk, using upper third of milk. N. B. If made fresh each time, use ℥j barley to ℥iv water.

V.

J. F. Meigs'.—℈j Russian isinglass or 2 square inches of ordinary gelatine in ½ pint cold water by boiling, then add to this ℥j arrowroot rubbed

to paste with ⅓–⅔ as much of good milk (p. r. n.); boil and add 2 tablespoonfuls of cream to the Oj. (Meigs and Pepper, p. 318.)

Or, equal parts of thin arrowroot (*loc. cit.*), water, lime-water, milk and cream.

VI.

J. S. Smith's Peptonized Milk.—

1 gill (℥jss) unskimmed milk.

1 " " water.

2 tablespoonfuls cream.

200 grains milk sugar.

1¼ grains ext. pancreatine. (Fairchild's).

4 grains bicarbonate soda; put all in bottle, in water as hot as your hands can bear for twenty minutes, warm and feed.

Oliver leaves out soda and keeps on milk till warmed (6 minutes).

Condensed Milk, diluted as above with equal parts of barley and lime water, makes it equivalent to ordinary milk, which may then be diluted with hot water, as required; condensed milk often renders excellent service as a temporary substitute for mother's milk, but from the large amount of sugar which it contains, it is not adapted for continued use.

Mixed feeding is sometimes necessary, when the mother's breasts are not able to furnish the child more than one or two nursings a day. In such cases separate the nursings as far as possible and give any of the above substitutes in the interval every 2–3 hours, as required, but do not starve the child on cracker water, oatmeal gruel or too greatly diluted condensed milk.

Cleanliness.—Whatever method of artificial feeding may be adopted, the strictest cleanliness is absolutely essential for its success. All complicated tubing should be rejected and simple black nipples such as can be turned and scrubbed daily, used. At least two of these and two bottles should be used daily, being kept alternately in weak saleratus water. After each feeding the child's mouth should be washed out with a bit of soft rag dipped in fresh water containing a pinch of borax, for in this way the occurrence of thrush may be prevented. In every case of bottle indigestion, the physician ought to inspect and smell the bottle, to convince himself as to its sourness, or otherwise.

Regularity in feeding is absolutely necessary for the well being of

the child, whether it be breast or bottle fed. On account of the very small size of the newborn infant's stomach, there can be no absolute rule laid down for the first few weeks of its life; after that, if nursed, it should be given the breasts alternately every two hours, for the first six weeks, except between the hours of 11 P. M. to 5 A. M. when it ought to be asleep, but frequently is not. Others advise that it should be given the breast every four hours during the night and not kept in the bed with its mother after nursing, but returned to its own cradle or crib. After three months the child ought not to be given the breast at all during the night later than 11, when it should be nursed and not again until 5–6 A. M. If it wakes in the interval, give it a little sweetened lukewarm water and thus give the mother her necessary rest and make the subsequent weaning of the child easier. A very young child swallows most easily lying on its right side, because in this position, the relatively large liver of the infant does not press upon its stomach. Hence it sometimes happens that a child refuses to nurse in any other position. In such cases the difficulty in regard to taking the right breast may be obviated by placing the child on its right side under the right arm of the mother.

CONSTIPATION is one of the frequent accompaniments, if not causes, of infantile indigestion, and ought always to be inquired after. Not at all infrequent in infants and young children, as Jacobi thinks, from *anatomical* reasons, viz., relative pouch-like character of intestine (colon), often with paralysis of sphincter.

Again, constipation frequently occurs in gastric catarrh, because the hard lumps of undigested food become coated with mucus, which presents too slippery a surface to aid peristaltic motion.

Treatment.—In very young children nothing is better than copious warm enemata (daily), or a small glycerine suppository at night, or a small quantity of milk of magnesia may be added to the bottle, *p. r. n.* For older children Starr recommends:—

(6)

℞. Res. podophyll., ... gr. ss
Alcohol, ... q. s. ad sol.
Syrupi, ... ad . . ℥iij. M.

SIG.—℥j once or twice daily.

but the taste is disagreeable, and children often obstinately refuse to take it. In such cases senna and figs, cascara cordial or manna may be substituted with good results, remembering that if persevered in eventually a proper habit is established. In fact, the child soon becomes a bundle of habits, good or bad, even in as trivial a matter as crying, which is not necessarily an injury to a child, but often exactly the contrary, except in those predisposed to eclampsia.

SITTING.—A child ought not to be encouraged to sit alone before it is eight months old, nor ought it to be tempted to stand before the eleventh or twelfth month, and then very cautiously. Still better leave the matter to Nature, for after the child has been taught to sit on the floor it will soon learn to creep, and as soon as it is safe will stand and walk.

BATHING.—The first bathing of the newborn child is usually too vigorous in the hands of the over-zealous monthly nurse. In fact, very little washing, and drying with absorbent cotton, is all that is necessary, and in the Philadelphia Woman's Hospital the child is not washed at all for the first twenty-four hours, but simply wrapped in a flannel slip and allowed to sleep for that time. The Cheyennes wrap their babies in dry horse manure for the first few days, and in India, Africa, and certain parts of Russia, it is considered little short of murder to give a baby an entire bath before it is a year old, and seldom thereafter.

Civilized children should be bathed at least once daily, unless they turn blue and appear cold or frightened after bathing, then cool sponging is all that is required.

WEANING should take place at the latest about the close of the ninth month, unless this occurs in summer, when it should be deferred until cooler weather, as changes in diet are extra hazardous in the heat of summer. The reason for the selection of the ninth month is that at that time the mother's milk begins to change, and about this time teeth are provided for other than milk food. Teething then approximates the time for weaning, and ordinarily the most favorable time to be selected is the few days rest after cutting the first four or six incisors. The change should be made gradually, in order that the child may not too greatly feel the change, continuing milk for some weeks as part of the diet, and adding

eggs, meat-gravy and juices gradually. The annexed will be found a good diet list for children during this period :—

DIET LIST FOR A CHILD ABOUT TEN MONTHS OLD.

First meal, 7 A. M. :—

A dessertspoonful of pearl barley jelly dissolved in a breakfastcupful of milk, and sweetened with loaf sugar.

Second meal, 10.30 A. M. :—

A breakfastcupful of milk, alkalinized if necessary by fifteen drops of the saccharated solution of lime.

Third meal, 2 P. M. :—

The yolk of one egg beaten up in a teacupful of milk.

Fourth meal, 5.30 P. M. :—

Same as the first.

Fifth meal, 11 P. M. :—

Same as the second.

Pearl barley boiled for hours forms, on cooling, after the water has been evaporated, a thin jelly for use as above.

2. MUCOUS DISEASE.

Definition.—A name given by Eustace Smith to a group of symptoms, attended with impaired nutrition, due to an excess of mucus in the entire alimentary canal.

Occurrence.—As a "symptom-complex" frequently met with, but doubtful, except for convenience, whether it should be considered as a separate disease, for it is not associated with any known anatomical lesions, other than those of chronic indigestion, and possibly those of incipient rachitis, or tuberculosis.

Symptoms.—A soft, flabby tongue, indented and smeared with mucus, is particularly characteristic of this disease. (Starr.) We find the child languid and pale, sallow, easily tired, and sleeping poorly at nights. It loses flesh, and there are frequently dark sepia circles underneath the eyes, and sudden changes of color in the face, now flushed, and now deadly white, as if faint. A curious irritability is also characteristic, the child being fretful, capricious and crying needlessly, languid by day and disturbed in sleep by night terrors. The appetite is capricious, and the abdomen large and protruding; the limbs small and wasted. The child is usually constipated, and the stools scanty and consist of

small dry lumps, containing a large quantity of free mucus, and their passage is generally attended with straining, and sometimes with prolapsus ani; or constipation and diarrhœa may alternate, there being a week or so of constipation, and then a dozen or more loose passages, constituting the so-called "bilious attacks."

The breath is often extremely offensive, especially in the morning, the tonsils being coated with a thick, foul-smelling secretion, although fetor of the breath may be present with perfectly clean tonsils, the odor in such cases being due to the perverted secretions of the post-pharyngeal glands. Again, there may be headaches, with jaundice and wandering abdominal or thoracic pains.

The skin early becomes impaired in its functions and is often rough and harsh, especially on the chest and arms, which are at times covered with brawny epithelium. The lymphatics are prone to enlarge upon slight provocation, but do not necessarily suppurate or remain swollen. The temperature is slightly, if at all affected.

Course and Prognosis.—This condition of affairs is by no means constant, there being intervals after the bilious attacks of apparent convalescence, but they are not of long continuance. The bad symptoms again return, and at last culminate in another crisis, from which the child emerges thinner and weaker. A hacking cough and intestinal worms not infrequently complicate this stage of the disease, which may persist until fatal exhaustion, in spite of a voracious appetite.

Etiology.—Excess of gastric and intestinal mucus ferments and decomposes the food with which it comes into contact, thereby rendering it indigestible and slow of absorption, while the resulting acid coagulates the mucus and interferes with peristalsis. This may produce the morbid appetite met with in some of these cases. The stools of infants always contain more mucus than those of adults, and many causes tend to increase this mucus to an abnormal amount. Among such may be mentioned scarlatina, measles and whooping-cough, which Eustace Smith believes its chief predisposing cause, for the reason that an excess of mucus is vomited in pertussis, and intestinal derangement is one of its constant complications; hence the danger of the disease in weakly children. The beginning of second dentition, is also a favorite time for the appearance of mucous disease.

Differentiation.—Not easy, especially from incipient tuberculosis, to which it apparently predisposes. The absence of afternoon temperature and presence of drowsiness after eating, night terrors, and "worm-eaten" tongue, are all helpful in the way of diagnosis.

Treatment.—The cause being well known, treatment must be directed to the removal of the excess of mucus from the alimentary canal. Either of the following is useful for keeping the bowels cleared of mucus and poorly digested food.

(7)

℞. Sod. bicarb, ... ʒj
Fld. ext. sennæ, ... ʒiij
Inf. gent. comp, ... ad . . . . . ʒiij. M.
SIG.—Teaspoonful before eating.—Starr.

(8)

℞. Sod. bicarb, ... 2 gm.
Sod. phosphat, ... 8 gm.
Syr. rhei. arom, ... 15 c.c.
Cascara cordial, ... 45 c.c. M.
SIG.—ʒj-ij mane et nocte.—H.

But regulation of diet is more necessary than medication. Exclude as far as possible all starchy foods, cake and candy, tea and coffee, but allow, fish, milk, eggs, and lean meat, celery, asparagus, raw oysters, and lettuce, making from time to time a diet list like the annexed. Also see to it that the child is kept in flannels, for "children dressed for beauty, with four or five inches of bare leg, nine times out of ten suffer from chronic indigestion or bronchitis." (Starr.) Every morning the child should be given a sponge bath (60°) in a properly warmed room, then rubbed with a crash towel and anointed with vaseline, cold cream, or oil of sesami. Out-door exercise on pleasant winter days, and as largely as possible in summer, greatly hastens recovery, which is almost certain with patience and persistence on the part of the physician.

DIET TABLE.

Breakfast.—Lime water and milk, soft egg, stale bread.

Lunch.—Beef tea and cracker.

Dinner.—Chop or lean beef, *no potatoes* nor more than one vegetable, custard or nogg.

Supper.—Milk and crackers, or oysters, raw or stewed.

3. RACHITIS.

Synonyms. — Rickets; the English disease; nourre; innutrio ossium.

Definition.—Innutrio ossium, or a constitutional defect by which the bones are illy nourished, and become malformed in consequence. Name derived from *paxis*, the spine, from its frequent deformity.

Varieties.—Essential and symptomatic, or by another division, (*a*) that in which no lime salts are deposited; (*b*) that in which those already deposited are carried away (osteomalacia).

History and Occurrence.—First described by Glisson in the seventeenth century. May, but rarely does, occur in inter-uterine life (congenital rickets). Most frequent from the middle of the first year to the end of the second year in life. About equally divided between boys and girls. The most frequent of the diseases of children in the larger cities of Europe.

Pathology.—Rachitis consists in a cessation of the deposits of the earthy constituents of bone in the layers of cartilage cells which form normally between the epiphyses and the bones. Consequently these layers of cartilage do not ossify, and the earthy matters already deposited in the centre of the bones are taken up by the continuous tissue changes, and not replaced by new material. Futhermore no new deposit of calcareous salts takes place under the periosteum which thickens and appears vascular and succulent. The bones likewise appear hyperæmic and softer, and therefore can be easily cut with scissors, especially in rachitis of the cranium. The periosteum cannot be loosened, without drawing away with it small portions of the attached bone, which appears soft and spongy directly beneath the periosteum, but grows more compact toward the centre. In rachitic bones the calcareous salts are diminished about one-half, and even when the rachitis has been cured, it leaves behind it distinctive marks. These consist in a final ossification of the whole former soft mass of bone into a compact, thick, bony substance, thus retaining its pathological original thickening, sclerosis, or eburnatio. The cranium remains larger, and its vault thickened. The weight of the bone is strikingly increased, occasioning the bending of the

hollow bones, which remain so, if they have not received timely treatment. When there has been marked rachitis of the thorax atelectasis is apt to be left behind. Thoracic rachitis is most common. Rachitis of the cranium—*craniotabes*—which is observed as early as the third month, consists of a hypertrophy of the cartilaginous layers of the sutures, which therefore appear broader. The fontanelles are larger, and ossify later, and so very gradually that the great fontanelle has been found open until the ninth year. The cranial bones, especially near the sutures, are soft. The occipital protuberances alone always remain hard; and there can be found more or less numerous soft spots, from the size of a pea to a cent, on the occiput, or a larger portion of the bone is yielding and parchment like. The latter condition is sometimes found also in healthy children. In the round soft places the bone is entirely absent, the thick and opaque pericranium and dura mater touch each other. This absence of bone is always secondary, and is caused by the pressure of the convolutions of the brain on the softened bone (*K*). The growth of the facial bones is also defective, and this arrest of development is seen most markedly in the cutting of the teeth. When rachitis occurs early, the first tooth frequently does not appear until towards the end of the first year; or if the rachitis begins about the end of the first year of life, then the pause between the first and second period of dentition is disproportionately long. The teeth already cut are deficient in enamel, early become black, and frequently fall out.

Rachitis of the thorax—*pectus carinatum*, pigeon or chicken breast—generally begins during the latter half of the first year of life. The cartilaginous, sternal extremities of the ossified or softened ribs can be felt projecting as thick knots—"rachitic rosary." The development of the ribs is also retarded, and these are frequently found bent by pressure in lifting, or from their yielding during inspiration to the pressure of the atmosphere, and the inward traction of the diaphragm. The thorax becomes flattened laterally, occasionally drawn in concavely, and the sternum in consequence curves anteriorly, and the apex of the ensiform appendage projects prominently. The transverse diameter of the thorax is lessened, and its antero-posterior diameter enlarged, although the cavity of the chest is smaller on account of the arrested develop-

ment of the ribs. This is the origin of the acquired complicating *atelectasis* of the lungs, which in proportion to its gravity is the chief source of danger to rachitic children.

The dorsal and lumbar vertebræ are also softened, and by carrying the child erect the spinal column becomes curved on itself posteriorly—*kyphosis*. This disappears on lying on the abdomen, or lifting the child by the shoulders. There is also observed, quite often, a lateral curvature—*scoliosis*—of the spine which is always complicated with a spiral twisting of the same. Simple kyphosis may disappear, but kypho scoliosis becomes permanent by longer duration.

Rachitis of the pelvis develops itself at the same time with that of the thorax, and leads to those changes of form which are generally recognized later, and especially affect girls because they frequently make their future confinements dangerous. These alterations in the form of the pelvis arise from standing, or walking too soon, and especially from sitting on a hard floor.

Rachitis of the extremities results in a curvature of the softened long bones from the traction of the muscles attached to them. Injuries often of a very trifling nature may convert these curvatures into fractures. The earlier the functions of the limbs are taxed, the greater are these curvatures; early attempts at walking produce the well-known *bow-legs*, and tottering walk; premature creeping causes "*knock-knees*. Like other sick children, rachitics learn to walk of their own accord later than usual. If they have already commenced to run about, they forget how at the onset of rachitis, and must learn anew to walk from their second to fourth year, sometimes much later. Rachitic children can very easily stick their toes in the mouth, on account of the ligaments of the joints being relaxed.

Course.—When recovery from rachitis begins—generally about the second year, though often much later with improper diet—the cranial sutures and fontanelles become smaller. The thickened pericranium again deposits earthy matters, at first in the frontal bones, which now appear considerably thickened, giving the cranium a square appearance—*caput quadratum*. Finally, the loss of bone substance in the occiput is repaired with earthy matters, and retarded development again proceeds more rapidly.

The bones begin to grow again, whereby their cortical portions become very compact and thick. All the curvatures may become gradually remedied, and only the infractions remain persistent. It is only when rachitis has been of several years' duration that the body remains small, forming a marked contrast to the relatively large head. For complete cure there ought not to be the slightest disturbance of digestion, but frequently this is a disagreeable complication of rachitis, thus aggravating the disease and greatly delaying its recovery.

Prognosis is generally good, for recovery from disease itself, but the complications are often dangerous, *e.g.*, in craniotabes, laryngismus stridulus may produce death; in thoracic rachitis with kyphoscoliosis we may have fatal results from secondary atelectasis, cardiac hypertrophy, capillary bronchitis, or lobular pneumonia. Pelvic rachitis is not infrequently the cause of death in later childbirth.

Prophylaxis.—Good air, proper food, and a wet-nurse if necessary. One of the most preventable of diseases. (Goodhart.)

Etiology.—The bad health of the parents may act as a predisposing or hereditary cause, but the exciting cause is always the want of fresh air and proper nourishment. Inter-uterine rachitis is the result of deficient nourishment of the mother, or of a pathological condition of the placenta. Rachitis attacks both children who have not been nursed at all and those who have been nursed too long, and, furthermore, those who have been fed too early with starchy food, which easily produces diarrhœa, and, lastly, those who have passed through any serious disease affecting unfavorably the digestive organs, *e.g.*, measles, pneumonia, and diarrhœa, are liable to be followed by rachitis. It is also found that more children are attacked in large cities, and toward the end of winter than during summer, and in the open country. Rachitis always begins before the close of the first period of dentition.

Symptoms.—Generally during, or after a persistent diarrhœa, there appear increasing uneasiness, and sensitiveness to touch, especially in lifting. The phosphates in the urine are increased three or four times, for the earthy constituents of bone introduced into the body are not deposited; soon follow profuse sweating and bronchial catarrh. The growth and form of all the bones are

disturbed, most evident in the rachitic extremities. First comes swelling of the wrists—articular ends of the radius and ulna—and then follows the thickening of the ankles, or of the distal articulations of the tibia and fibula. This thickening results from an exuberant growth of the cartilages, the traction of the muscles passing over the joint, and the reciprocal pressure between the articular extremities themselves. On account of this hypertrophy the long bones increase less in length, and become flexible. Consequently the traction of the muscles inserted in the bones produces numerous changes of form in them, giving rise to various distortions, and quite often to bending of the long bones (infractions) of the lower leg and forearm, whose return to their normal position is prevented by the action of the same muscles. The forearm and thigh appear bent anteriorly outward, the upper arm to the outside, and the tibia in its lower third is bent anteriorly. Craniotabes, or rachitis of the cranium, manifests itself in profuse sweating of the head, which bores into the pillow with continual uneasiness. This originates from the pressure of any hard substances on the soft bones, producing pain, and this induces continuous rubbing of the head to and fro, producing, later, complete baldness of the back part of the head. A change of position pacifies the child, most perfectly when it is lifted up, or laid on its abdomen, thus leaving the back part of the head free from pressure. Pressure upon the exposed bone leads to various forms of convulsions, and especially to spasm of the glottis. In rachitis of the thorax, as a rule, the children cry on being lifted, but are quiet on being laid down. Likewise, any pressure on the ribs is painful.

Progress.—Generally the disease is without fever in the chronic form, which can last several years. By that time usually the whole skeleton has been equally attacked, consequently all its parts are imperfectly developed, and if neglected, permanently deformed.

Treatment.—1st. Attention to nutrition. Very often too long nursing must be prohibited, and instead Liebig's soup, eggs, milk, etc., ordered.

Cleanliness and good air; frequent baths and open-air breathing.

Cod-liver oil, one teaspoonful first, and then a tablespoonful three times a day, is only contra-indicated in diarrhœa.

DIET TABLE FOR RACHITICS, TWELVE TO TWENTY-FOUR MONTHS.

Breakfast.—Milk and crackers or toast, or cracked wheat.

11 A. M.—Milk and lime-water.

2 P. M.—Chop, gravy, and stale bread; cauliflower.

6 P. M.—Like breakfast, or egg, if not meat at noon.

8 P. M.—Milk and lime-water.

(9)

℞. Olei morrhuæ,
Glycerinæ, ... aa . . . . . ℥ij
Ext. malt, ... ℥iv
Ess. gaulther., ... ℥j.

Mix thoroughly and give one to two teaspoonfuls after meals.—H.

In giving cod-liver oil, remember only that which is assimilated is of any value, and that it is most quickly assimilated when given about an hour after eating, when it is not apt to spoil the appetite for the next meal. Others speak very highly of the syrup of the lactophosphate of lime in rachitis.

2d. Removal of all disturbances of digestion, *e.g.*, pepsine 1–4 gr. before meals, etc. If diarrhœa, check by opiates, astringents and appropriate remedies.

3d. In craniotabes, it is necessary to provide some suitable rest for the softened occiput such as a horse-hair pillow with a pear-shaped aperture for the head. For the sweating of the head wash it frequently (hourly) with cool vinegar and water containing alum.

4th. When there is rachitis of the chest, lift the children carefully by the neck and buttocks.

5th. The timely use of apparatus for the correction of the curvatures of the long bones. If the disease has already run its course supports are of no use, but resection of wedges of bone from the deformed bones must be made, taking care to save the marrow as much as possible.

SCROFULOSIS.

Synonyms.—Scrofula; scrofulkrankheit.

Definition.—Consists in such a malcomposition of the blood that the most various hyperplasia of nearly all the organs results. This manifests itself in the form of chronic inflammations with tendency to ulceration.

Etiology.—The predisposing cause is descent from weakly parents, one of them at least generally being in a cachectic condition; from chronic pneumonia, phthisis pulmonalis, syphilis, previous scrofula, etc. But scrofula is not always hereditary; too often exciting causes produce the disease de novo. These causes are faulty nutrition, such as too much starchy food before the ninth month, excess of bread, potatoes and vegetables in second and third year; bad air in underground lodging, or from too many persons in a room, or the general bad air of large cities. Again, scrofula may arise from too sedentary a life, and when there is already a predisposition, from "colds," or frequent coolings of the surface of the body.

Symptoms.—Scrofula, which is often joined with an especial quickness of intellect and comprehension, may remain for a time latent until some external influence causes its outbreak. This exciting cause may be vaccination, a wound, frequent coolings of the skin, or some disease, especially measles or whooping-cough. Generally it begins with a cutaneous eruption, or a cold which refuses to be cured or frequently returns if bettered. The eyes become glistening and moist, and their continuous running leads to an eczema of the surrounding parts. The subcutaneous tissue often becomes extremely adipose. The muscles and the surface of the skin are anæmic and relaxed, the latter perspiring easily. When there are cutaneous affections the implicated lymphatic glands are always swollen, and scrofulous affections of nearly every organ may follow, especially of the skin, mucous membranes and its lymphatic system, the periosteum and bones. On the skin we may find *eczema simplex* or *rubrum*, whose vesicles dry in yellowish-brown crusts, beneath which fluid generally oozes forth. This is especially so on the face, nose, ears and hairy scalp, forming there *eczema capillitis*. Or we may find tinea capitis, porrigo, or scald, or im-

petigo, distinguished by pustules which also dry down, or ecthyma, beneath whose large pustules the skin is ulcerated. Lupus is found under the varieties, exfolians, exulcerans, serpiginosis—the latter is the so-called *salt rheum*, found especially on the face, nose and cheeks. Lichen is known by groups of whitish papules, and often requires, like the previous-mentioned eruptions, a very long time for its cure, which can be hastened only by constitutional treatment. The same is true of the inflammation of the glandular apparatus in the border of the eyelids—*adenitis meibomiana hordeolum*—where the lids thicken and the lashes fall out. The mucous membrane and sensory organs of the nose are especially apt to be attacked with chronic catarrh, with an eczema and intertrigo of the upper lip and nostrils, and the swelling of the upper lip and nose, and the condition known as scrofulous ozæna, resulting from the ulceration of the periosteum of the cavity of the nose. Not infrequently there is a separation of a sequestra, which always makes itself known by a most offensive odor, and a thin, purulent discharge. Moreover, the mouth often shows hypertrophied tonsils and chronic pharyngitis.

The eyes are prone to the complications of *herpes conjunctivitæ et corneæ* and keratitis scrofulosis and episcleritis with secondary blepharospasmus, and spasm of the lids (nystagmus) in consequence of photophobia. The most important of these is keratitis, which may lead to the loss of sight, perforation of the cornea, and formation of staphyloma. Superficial or deep cicatrices are certain to remain. These are the nebulous maculæ corneæ, or white spots, which interfere more or less with vision, according to their position. A chronic catarrh of the external auditory meatus may affect the ear, accompanied with an offensive discharge and an eczema of the surrounding parts. *Otitis interna* proceeds from periostitis of the middle ear, and may terminate in caries or necrosis of the petrous or mastoid processes of the temporal bone, with secondary purulent meningitis and formation of an abscess in the brain, and sudden death.

In all scrofulous diseases of the skin, mucous membranes, and organs of sense, all the *lymphatic glands* whose vessels pass through the affected parts become secondarily hypertrophied. In a longer or shorter time after the cure of the skin or the mucous

membrane, all the glands diminish in size, or this may occur with the majority of them, while others become caseous or tuberculous; or they may suppurate, becoming at first larger, and from the first painful on pressure. Very rarely, in glands of children, the process of calcification which is sometimes observed later in life takes place. Usually, the glandular tumors, which were at first movable under the skin, now soften at the centre, and become fastened to the skin, which becomes reddened at one point, through which at last the gland empties out its contents—a pure sero-purulent fluid or pus containing particles of the caseously degenerated gland. If these abscesses, which frequently communicate with one another, are left to themselves, they change into long fistulous openings, which often discharge for years a thin pus, and are sure to leave behind them disfiguring, arborescent scars. The caseous degeneration of the internal lymphatic glands is of greater importance, especially that of the bronchial and mesenteric glands—bronchial tuberculosis and tabes mesenterica.

Since these glands cannot evacuate their fluid contents externally, more or less destruction of internal organs must result from the opening of these lymphatic abscesses into the œsophagus, intestines, trachea, or cavities of the lungs, and still more rarely into the aorta. Finally, the *periosteum* and the bone substance of any of the bones may become diseased, producing acute or chronic periostitis, and ostitis scrofulosa. This especially affects the spinal column—spondylitis, Pott's disease, properly named spondyarthrocace—and the tibia, femur, and humerus are also exposed to the same fate. Periostitis rarely ends in resolution, but more generally in suppuration, the pus discharging externally through fistulous openings. At the same time the bone becomes inflamed, and that part of the bone which is no longer nourished by the caseously-infiltrated periosteum generally dies. This sequestra is cast off by the suppuration of the surrounding parts—*caries seu ulceratio ossis superficialis*. The marrow also frequently inflames, resulting in scrofulous osteomyelitis, or endostitis. Extravasation of blood into the hyperæmic marrow generally produces suppuration—*caries centralis*—whereupon the bone likewise dies—*necrosis centralis*—as its internal supply of blood is cut off. Finally, the periosteum also shares in the inflammation, and the result is the same as in scrofu-

lous periostitis, except that here the fistulous passages always open into the medullary cavity. Sometimes there is a wonderful increase in the size of the bone with a diminution of its substance. This originates from an absorption of the bone substance and a consequent enlargement of the medullary cavity, while at the same time the periosteum throws out new layers of bone, which are partially destroyed by absorption—*osteo-porosis*—spina ventosa, etc.

Thus the joints are very often attacked, and in these cases the pus resulting from the inflammation of the articular extremities of the bone breaks through into the cavity of the joint, and rapidly causes there an ichorous inflammation—*arthrocace*, especially *cox-arthrocace*. Or the synovial membrane may become first inflamed and produce a large quantity of the granulations known as fungus articuli—*tumor albus*, or "white swelling." The most frequent and important of these are the inflammations of the hip joint—*coxitis scrofulosa*, or hip disease—and the inflammations of the knee joint—*gonitis scrofulosa*, or *tumor albus genu*.

Next in frequency are the inflammations of the elbow joint—*olecranonarthrocace*—and those of the ankle joint—*podarthrocace*, or *tumor albus pedis*.

Secondarily, and indeed generally, as a consequence of protracted suppuration, all the internal organs may become diseased. This may take place under the form of amyloid degeneration, which most frequently attacks the liver, spleen, and kidneys, or in the form of miliary tubercles, which, as is well known, form the keystone and foundation of all kinds of chronic suppuration, always presupposing at least the presence of a previous suppurating cavity in the lungs, lymphatic glands, bones, or joints, from which the infection proceeds by means of emboli or hereditary predisposition.

Progress.—Scrofula is always chronic, but may end in a perfect cure, even after amyloid degeneration has occurred. It may, nevertheless, more rarely lead to other chronic diseases, or more often to the development of tuberculosis with a fatal result.

Prognosis.—The affections of the superficial lymphatic glands, skin and mucous membranes have a tolerably good prognosis. The prognosis of scrofulous diseases of the lungs, bones, bronchial and mesenteric glands, as well as amyloid degeneration, is worse. The appearance of tuberculosis generally allows of no reasonable

hope after the recognition of the bacillus tuberculosis in the sputa.

Prophylaxis.—Good air and food, and the use of frequent cool, and in summer, cold, ablutions and baths by those who inherit a hereditary diathesis, especially the children of tuberculous parents. As an outline for diet table we suggest—

Breakfast.—Cocoa, egg, toast, butter ad lib.
10 A. M.—Warm milk, and lime-water, cracker.
Dinner.—Chop, steak, gravy, stale bread, cauliflower, oysters.
6 P.M.—Same as breakfast, or peptonized meats.

Sea air is especially helpful in all cases of suspected scrofula, and can hardly be too strongly insisted upon during the summer, when the means of the parents will allow it.

Treatment should be both general and local. General treatment is most important, because without it no permanent improvement can be made, notwithstanding persistent local efforts, and, *vice versâ*, general treatment is essentially aided by local remedies. First of all, good air must be secured in the country, among the mountains, at the seashore, or in summer dwellings. Then there must also be good nourishment, at first a wet-nurse, then milk, meat, broths, eggs, salt, ripe fruits, and the most nourishing foods. Potatoes, puddings, and fresh bread are to be entirely forbidden. Cod-liver oil stands at the head of all medicines (an emulsion may be commenced with, and later the common oil used), and is to be given in doses of one-half to one tablespoonful three times a day, one hour after meals. It is only contra-indicated in diarrhœa, gastric catarrh, inflammations, and feverish conditions. In case cod-liver oil does not agree with the children, fresh cream, the iodide of iron, syrup ferri (gtt. v–xx), in water, may be given instead; or iodide of potash (gr. iij–viij) daily, in syrup of cinnamon or ginger, or the saccharated carbonate of iron, as much as will lie on the point of a knife, three *per diem* may be prescribed. Sea and salt baths are always supporting. They may be artificially substituted by common salt baths (one-half to one pound) used, at first, for one-fourth of an hour, and later for an hour.

Skin diseases first demand cleanliness, the crusts first to be removed by oil, etc., and after which removal, ung. præcip., or ung.

oxidi zinci may be applied. In scald head, the hairs are also to be removed, and scratching is always to be guarded against by cutting the nails twice a week, and putting the child's hands in bags at night. Indolent ulcers are to be stimulated by applications of nitrate of silver, and lupus cauterized with caustic potash, chloride zinc paste, or trichloracetic acid. Arsenical powders must not be used with children on account of the ease with which they become poisoned. In ozæna, disinfecting and astringent solutions are to be applied with a nasal douche or DeBilviss' spray. Scrofulous ophthalmia, accompanied by photophobia, requires local use of ung. hyd. oxidi flav. (gr. ij–℥j), and the free administration of opiates for pain.

All heating bandages must be left off, and a single layer of silk tied over the eyes. Several times daily dropping into the eye of a solution of sulphate of atropine, or warm collyria of boracic acid with ext. belladonna (1:40), one half to one hour daily, should be employed.

When there is inflammation of the external auditory meatus, use weak injections of peroxide of hydrogen, and deodorizing lotions several times a day. In deep-seated diseases of the eye and ear the specialist ought always to be consulted. When there is a swelling of the lymphatic glands the organs from which the lymphatic vessels arise must be carefully examined. If the glands remain enlarged after the cure of the original disease, we should endeavor to bring them to resolution by painting them with tincture of iodine, or the use of ung. ext. phytolac. decandr. (℥j–℥j). Inevitable softening of the lymphatic glands is to be promoted by stimulating salves and plasters, and when there is great softening an opening may be facilitated by tapping with the needle of a hypodermic syringe. Incisions are contra-indicated because they leave disfiguring, gristly scars, and for the same reasons, after the spontaneous opening of an abscess, the callous borders of its fistulous openings are to be snipped, and the cavity scraped. When the periosteum, bone, or marrow is affected rest is indicated, with cold compresses in the initial stages. When suppuration begins, poultices and proper position should be attended to, with the extraction of sequestra, and resection of the joint according to antiseptic surgical principles. In severe affections of this kind,

and especially in the larger operations, surgeons should be consulted as specialists, but it must be remembered, that without general treatment of the underlying scrofula it is rare that any permanent cure can be obtained.

5. PURPURA.

Synonyms.—Morbus maculosus Werlhofii; peliosis rheumatica (Schonbein); blutflecken-krankheit; purpura simplex et hemorrhagica.

Definition.—Transitory hemorrhages into the subcutaneous tissue, or from mucous membranes.

Varieties.—When confined to the first it is known as *p. simplex*, but when hemorrhage occurs from mucous membranes it is known as *purpura hemorrhagica*.

Etiology.—May occur as a primary or secondary disease, being in the first case due to an inherited diathesis, congenital fragility of the capillaries, hæmorrhophilia; or it may be due to acquired changes in the capillaries, *e.g.*, emboli, etc.; or, thirdly, from changes in the composition of the blood, produced by insufficient or poor food, living in bad air, etc. Secondary purpura may follow acute fatty degeneration of the newborn (p. 33), all acute infectious diseases (measles, scrofula, pyæmia, whooping-cough, pneumonia, etc.).

Symptoms.—After some days of general uneasiness, and of pain in the limbs and heaviness, attended with loss of appetite, there is noticed either a single, or repeated capillary hemorrhage into the subcutaneous tissue, and the rete malpighii—*purpura simplex*; or there may be bleeding from mucous membranes, more frequently with rupture of the same than in the case of the skin, and consequently free hemorrhage from the nose, mouth, intestines, and less frequently from the stomach—hæmatemesis, or from the kidneys or bladder—hæmaturia, or from the lungs. In more serious cases hemorrhage takes place into the serous membranes, with resulting meningitis, pleuritis, or pericarditis. Or ecchymoses may occur about the joints, with the swelling, pain and discoloration known as peliosis rheumatica. These spots, of course, do not disappear under pressure, as does the redness of articular rheumatism.

Course and Prognosis.—The disease is rarely attended with fever unless hemorrhage takes place into a serous sack. By repetition of bleeding the disease may last a week. Copious hemorrhage may produce the symptoms of collapse, filiform pulse, blanched skin, unconsciousness, or, if the hemorrhage has been meningeal, convulsions. The prognosis is good so long as the hemorrhage is simply ecchymotic; if into the serous membranes, the disease is always dangerous. In hæmorrhophilia the prognosis is discouraging.

Treatment.—Perfect rest, good nourishment, preferably liquid in the form of milk, broths or soups. Medicaments; ergot, ergotine, mineral acids, quinine, p. r. n. For pulmonary hemorrhage, bits of ice, atropine—hypodermically—iron, fl. ext. hamamelis, etc. For intestinal hemorrhage, vinegar enemata, and in obstinate epistaxis, tamponade. For that form known as peliosis rheumatica, tinct. ferri chlor. (gtt. ij–v) with a roller bandage about the swollen joints, acts like a specific.

In hemorrhagic families special care must be taken to avoid all injuries, such as blows, cupping, or even drawing the teeth, but such children, even with the greatest care, sooner or later succumb to some trivial injury.

6. SCORBUTUS.

Synonym.—Scurvy.

Definition.—A diet dyscrasia, arising from lack of fresh food.

Etiology.—Bad hygienic surroundings combined with food deficient in fresh vegetables and meat, will invariably produce scurvy, even in persons previously healthy. Certain diseases, such as typhus, produce similar results.

Symptoms and Course.—Great anæmia, excessive emaciation and tendency to rupture of the capillaries and exudations of various sorts are among the general symptoms of scurvy. The proneness of the gums to tenderness, bleeding and sloughing is almost universal in this disease. As in simple ulcerative stomatitis the edges of the gums become swollen, reddish blue, and the teeth loosen. In severe cases ulceration ensues with a gangrenous odor and the dribbling of an offensive reddish-brown saliva. Hemorrhage may occur from the gums, tongue, mucous membranes, or anywhere on the surface of the body.

Prognosis.—Excellent, when timely change can be made in food and unhygienic surroundings. The secondary scurvy of typhus is nearly hopeless. The differentiation between scurvy and local disease of the mouth may be made upon the fact that in scurvy the mucous membrane of the cheeks and hard palate is always anæmic.

Treatment.—Good food, especially fresh meats, raw cabbage, lettuce, cress, lime juice and acidulous fruits. Astringent washes and gargle (tinct. myrrh, ℥ss–℥viij) are to be faithfully used, and the mouth kept disinfected with a weak solution of permanganate of potassium; change of residence if necessary, and quinine and iron if needed.

SECTION V.

THE CONSTITUTIONAL INFECTIOUS DISEASES.

Those which are known to be contracted from those previously sick of the same disease, are smallpox, diphtheria, scarlet fever, chicken-pox, measles, rotheln, pemphigus, influenza, whooping cough, syphilis and mumps.

1. VARIOLA VERA.

Synonyms.—Pocken; blattern.

Symptoms and Course.—Smallpox and its modifications of varioloid in the child, differ in no respect, either in etiology, stages, course or complications, from the same diseases as seen in the adult.

Differentiation.—(See *Table below.*)

	Latent.	*Appears after first rigor.*
Scarlatina,	4–8 days,	18–24 hours.
Erysipelas,	4–7 "	24–26 "
Variola,	8–14 "	48 "
Rubeola,	7–8 "	72 "

It may be remembered that in smallpox there is first an erythematous blush in the midst of which small hard papules appear—at first on the forehead—on which, by the aid of a magnifying glass, small vesicles may be distinguished. This serves to differentiate it from scarlatina and erysipelas, for which it at first might be mistaken on account of the initial erythema. Later umbilication makes the diagnosis certain

Treatment.—During the prodromal stage, chloral hydrate, or antifebrin may be used with advantage for the atrocious head- and back-aches. Phenacetin and ice bags may be indicated, if there is threatened hyperæmia of the brain. Kormann strongly advises the pricking of each vesicle early with a gold needle, and then touching it with a strong solution of nitrate of silver. Others speak well of iodoform in glycerine, or powdered charcoal on cotton wool, for pitting is much less marked when the pustules are protected from the light. Diet should be light, and the bowels kept open, and the fever in check with antipyretics. Scratching must be prevented during the formation of scabs, if necessary, by tying the child's hands in small muslin bags. Dusting with starch, or applying boro-glycerine (50 per cent. solution) will sometimes allay the itching, which often is intolerable. Others rely upon equal parts of oil and lime water containing subnitrate of bismuth in suspension, and the thickened epidermis of the palms and scales may be softened by a strong solution of potash carefully applied.

Threatened septicæmia should be energetically combated with the free use of quinine and alcohol. Gargling with a weak solution of permanganate of potash often relieves the throat, and a four per cent. solution of cocaine lessens the pain in the ears.

Prophylaxis.—The prophylaxis of smallpox is one of the most important duties of the physician, whose neglect in isolating individual cases of smallpox or carelessness in vaccination can hardly be condoned. Revaccination, no matter how recently performed before, should be insisted upon after every known exposure of a child to the disease, for even if it does not prevent the occurrence of smallpox it will greatly modify its course.

Vaccination generally protects for from seven to ten years, and protection begins five days after vaccination (K.). It is performed preferably in the spring or early summer, before or between

dentition, therefore best about the third or tenth month, unless the child should happen to be born during an epidemic of variola, when vaccination should be made as soon as possible after birth.

Vaccination may be made directly from arm to arm, from a healthy vaccinia vesicle, or, as is more frequently done in this country, with a bit of ivory dipped in the lymph from a vesicle on the udder of a calf suffering from true cow-pox. It is not necessary to make an incision to insert the lymph, as is sometimes done. Simply criss-crossing the skin, preferably over the deltoid, until it begins to ooze serum, and then rubbing gently with the end of the ivory containing the virus, is far better than a deeper incision, as the flow of the blood often prevents the very thing it is designed to accomplish. The clothing should be kept away from the arm until the spot has entirely dried, and after this it usually requires no further attention. From the third to the seventh day the point pricked becomes reddened and slightly elevated into a nodule. A couple of days later (fifth) a clear vesicle appears on the summit of this, and soon shows umbilication, which is the time for taking lpmph if direct vaccination from it is now desired. After the seventh day the vesicle transforms itself into a pustule, its contents becoming turbid and the surrounding areola redder. Often there is also slight fever, rise of temperature, restlessness and thirst for a day or two. About the twelfth the pustule begins to desiccate and the scab drops off, leaving an irregular, reddish cicatrix, which eventually becomes white.

Vaccination does not always run the simple course here detailed, for all its symptoms may be intensified, and to them added the chill and fever of suppuration, convulsions and even collapse. Urticaria and erythema are by no means infrequent with neurotic children, also eczema and ecthyma in those predisposed to scrofula, in whom sometimes the pustules obstinately refuse to heal, converting themselves into sluggish ulcers. Erysipelas may complicate when children are vaccinated in septic houses, and in such the erysipelatous inflammation may spread over the entire arm and trunk, and recovery not take place in two or three weeks. Treatment of such cases is, of course, the same as that of traumatic erysipelas otherwise produced. Syphilis is apparently the only disease which can be transmitted by vaccination, and hence the greatest care

should be taken in the selection of humanized lymph—the bovine to be preferred whenever possible.

As has already been hinted, vaccination should be made obligatory at least once in ten years, beginning with the first year of life, and repeated at the time of admission to school and thereafter as necessary.

2. VARICELLA.

Synonyms.—Chicken-pox ; sheep-pox ; windpocke.

Definition and Differentiation.—Varicella occupies about the same relation to variola as rubeola to measles, and, like rubeola, is to be considered a separate disease.

Course.—After a period of incubation of eight to ten days, either with or without a prodromal stage of one to three days of slight chill, short rapid rise of fever, pain in the limbs, vomiting, loss of appetite, etc., an exanthema appears and develops itself in one-half to one day. Vesicles form, of the size of a pin-head to a pea, surrounded by a red areola, rarely, and then but slightly, umbilicated. During the next few days the contents of the vesicles become sero-purulent and turbid, and generally after-crops of eruption appear, so that fresh vesicles and old pustules stand side by side. After three to four days their contents dry into a thin crust, which becomes detached in two to three days, and unless there has been scratching, no cicatrix is left, but only a red spot. The vesicles appear thickly on the back, but the largest ones are generally found on the face, where they remind one of the variola pustules.

Prognosis.—Always good.

Treatment.—Purely symptomatic. For the annoying itching, powdering of the skin or rubbing with fat. After the scabs form, occasional baths are useful, and the bowels should be kept fairly loose during the course of the disease.

3. SCARLATINA.

Synonyms.—Scharlach ; Scarlet fever.

Etiology.—Contagious from personal infection, notably so from convalescent patients during the stage of desquamation—although the poison may be carried by third persons or clothing,

milk, letters, books, toys, and almost anything handled by those sick of scarlet fever; the contagiousness of different epidemics seems to vary greatly. Children under six months usually escape, and those up to a year are fairly exempt. As a rule, one attack prevents a second, although such second attacks are well authenticated. Repeated efforts have been made to discover the specific microbe of scarlatina, but as yet only with fair probability that it is communicated to man from one of the lower animals.

Symptoms and Course.—The period of incubation varies from six to eight days, even as late as the end of the second week, and then comes the onset of the disease, twelve to forty-eight hours, characterized by chilliness, nausea, high fever (103°–104° F.), thirst, languor and sore throat, with swelling of the lymphatics of the neck.

The scarlatinal eruption usually appears within forty-eight hours after the onset of the disease, as a scarcely perceptible scarlet flush or pin-point eruption, not unlike the color of a boiled lobster. This begins on the neck or cheeks and in forty-eight hours spreads over the entire body, either as a uniform redness or in large patches—S. variegata. Ruddy children show the rash most distinctly, and it is intensified by the heat of the bed, crying and hot baths. Until the eruption is well out, the fever continues high, often extremely so—105°–107°—the pulse quick and sthenic, except in cases of malignant scarlatina, when there may be general depression, delirium and collapse. There is always a moderately painful sore throat—pharyngitis. The tongue is furred with a bright red tip and borders—"strawberry tongue," or the papillæ are often greatly swollen and cause the granular appearance known as "raspberry tongue. These symptoms disappear on the fourth day, after which the fever has only evening exacerbations, unless inflammatory complications cause a fresh increase. Next comes the stage of desquamation or "scaling." Those places which first became red fade in like order, though the loins and thighs increase in redness. On account of the great itching of the face and neck its epidermis becomes cracked and cast off in shreds, or lamellæ, the hands and tips of the fingers shedding these most abundantly, especially after a well marked erythema. Desquamation also occurs from the attacked mucous

membranes of the tongue, throat, trachea, kidneys and intestines. If there are intercurrent disturbances this desquamation is retarded.

This is the natural course of a typical case of scarlatina, but we find it liable to variations, such as—

(*a*) *Scarlatina sine angina*, or a scarlatina without a sore throat, or there may even be—

(*b*) *Scarlatina sine exanthema*; very difficult to diagnose and usually very fatal in its results, and recognized later by the appearance of scarlet fever among other members of the family. In some of these cases desquamation occurs, proving that an eruption probably took place, of only a few hours' duration.

(*c*) *Scarlatina papulosa* is another variety, in which the papillæ of the skin become swollen and the whole surface of the body assumes a "goose-skin" appearance.

(*d*) *Scarlatina miliaria* is a modification of the last, in which these papillæ are covered with vesicles, and if these become confluent, it constitutes—

(*e*) *Scarlatina pemphigoides*. (See *Pemphigus*.)

(*f*) *Scarlatina petechialis*; most dangerous of all.

Complications and Sequelæ.—The most frequent of these is an intensification of the ordinary angina of scarlatina into a diphtheritic form, in which more or less of the tonsils and uvula is covered with a grayish-white membrane. When this is removed the superficial layers of the subjacent mucous membrane will be found destroyed, and in malignant epidemics of this variety of scarlatina this may proceed to actual gangrene of the tonsils and their surrounding parts. Or the diphtheritic inflammation may extend up the Eustachian tubes and result in permanent deafness. Or a croupy metallic cough informs us that the membrane has extended into the larynx. When the nostrils are similarly affected with a diphtheritic coryza there is a profuse, thin, excoriating discharge from the nose, often exceedingly offensive in odor, and septicæmia is usually not far distant. Even in mild forms of diphtheria this danger is to be feared from the later inflammation and suppuration of the parotid, or lymphatic glands, though, as a rule, it will be found true that the involvement of the lymphatic glands is in direct proportion to the severity of the throat lesions.

(*b*) *Scarlatinal dropsy* is one of the more frequent and serious

complications of this disease. It usually appears during desquamation, even when no albumin can be detected in the urine, which should be examined daily during this period. The cause of this anasarca is a scarlatinal nephritis, intensified by chilling, or possibly from a paralysis of the subcutaneous vasomotor nervous system.

(*c*) *Diarrhœas and dysenteries* sometimes occur during the same stage of the disease, and are produced probably by desquamation of the intestinal epithelium.

(*d*) The *tubuli uriniferi*, like the intestines, normally shed their epithelium at this time—epithelial casts in urine—but often there is a true hyperæmia of the cortex, and even inflammation of the convoluted tubes associated with this, so that hyaline casts also appear in the urine, and if a large portion of the kidney is implicated, death may result from the uræmia of a morbus Brightii acutus.

(*e*) More limited *disease of the kidney* may cause localized œdema, such as ascites, hydrops pleurohydrothorax, hydrops pericardii, œdema of the lungs, or dropsical effusion into joints. Such complications not infrequently follow a short apparent convalescence, during which the children recover their appetite and exhibit nothing abnormal except perhaps slight lassitude. Then appear loss of appetite, depression and pain in the region of the kidney—one or both. The amount of the urine is greatly diminished (℥jv–℥x in as many days). It is concentrated, bloody, and contains albumin and casts. In a few days the whole body becomes bloated, hands, face and feet simultaneously, and respiration becomes short, superficial, and labored, so much so that the child can sleep only in the sitting posture, and grasps eagerly any object which promises to aid the pectoral muscles in their efforts to expand the chest. If the case is further complicated with hydropericardium, the pulse becomes small and irregular and præcordial distress is very marked. Such cases generally end fatally, either from fatty degeneration of the kidney and consequent uræmia, or suddenly from heart failure or œdema of the glottis. But if the kidney lesion be confined to a small area, the albumin may gradually disappear from the urine, the dropsical effusions may be absorbed, and a slow recovery effected.

(*f*) More rarely *serious cerebral affections*, such as paralyses, blindness, aphasia, loss of memory or idiocy, remain as sequelæ of scarlatina.

(*g*) *Rheumatic pains* in the joints should have been spoken of among the symptoms of the third stage of scarlatina, and articular rheumatism, with or without pleuritis and endocarditis, is one of its not infrequent sequelæ. It may successively attack all the joints of the body, and occasionally leads to suppuration.

(*h*) *Noma* has also been known to follow scarlatina, in very unsanitary localities.

Prognosis is none too good. The average mortality is 3–5 per per cent., and rises to 30 per cent. in malignant epidemics, and even when children do not die, many of them are left with life-long disabilities, even after what are known as mild attacks.

Prophylaxis.—Next to limiting the spread of smallpox, it is incumbent upon the family physician to see that similar care is exercised in regard to scarlet fever, which is contagious from the initial sore throat, until the last branny scales, usually between the fingers or toes, have been removed. Six weeks quarantine is none too long for an average case of scarlatina, and this must be lengthened if desquamation is not finished by that time. If possible, other children should be sent from the infected house, until recovery has taken place and all the rooms occupied by the sick and their attendants have been disinfected. This is most easily done by burning a pound of sulphur in each room, closed as tightly as possible, and then thoroughly scrubbing and ventilating before again occupying the room. All sheets, bedding, towels and articles that can be washed, should be immediately thrown into boiling water as soon as used, and visiting friends and neighbors absolutely forbidden. Sulphocarbolate of soda, has some reputation as a prophylactic (gr. ij–v. t. i. d.).

Treatment.—For the initial sore throat, vomiting and fever, little medication is required. If the nausea is annoying, the following will be found useful:—

(10)

℞. Aquæ calcis,
" cinnam., ... āā . . . . . 30 c.c.
Tinct. gelsem., ... 2 c.c. M.
Teaspoonful hourly until relieved.

(11)

℞. Chloral hydrat., ... 2–4 gm.
Aquæ camph., ... 15 c.c.
Syrup aur. cort., ... 45 c.c. M.
To alternate with other remedies to quiet restlessness.

Others speak very highly of tinct. aconite given in this stage until its full effects are produced, *e. g.*, a drop every hour until its physiological effects are obtained. If malignant from the onset, prompt stimulation by the liberal use of wine or whiskey, and packing with wet sheets, wrung out of hot water and sprinkled with mustard, hold out the best prospects of relief. At the same time the throat should be carefully looked after, and sponged every two or three hours with undiluted peroxide of hydrogen, followed with the liberal use of the steam atomizer, whose cup contains gtt. v–xv, olei eucalypt., or better, Sander's eucalyptol. Even in mild cases, the inunction of the skin at least twice daily with carbolated vaseline, or oleum theobromæ, adds much to the comfort of the patient, helps to limit the spread of the disease, and prevents chilling of the body.

Should the eruption be tardy in making its appearance, it may be hastened by the mustard pack, or rubbing the body with dry mustard or hot vinegar. Threatening cerebral symptoms during the prodromal stage justify the use of cold to the head, and the internal use of chloral and ergot with a purgative dose of calomel, followed by some mild saline. Failing strength, even when the fever is at its height, calls for quinine inunctions, and the internal use of alcohol to its full physiological effects, for as in diphtheria, there is a remarkable tolerance of alcohol, for ℥ss. or more of the best whiskey can be given every half hour, with no symptoms of intoxication and with marked relief to the patient. In similar conditions, the Germans generally advise camphor and musk in full doses.

During the entire course of the disease the urine ought to be examined daily—twice, if there are any suspicious symptoms, for albumin and casts, and scanty urine should be combated with the free use of lemonade, liquor ammonii acetatis, and if these fail minute doses of calomel (one-tenth grain every two hours) and caffein. If, in spite of these, the symptoms of acute Bright's disease appear, with threatening anasarca, infusion of digitalis (℥ss–

℥j p. r. n.) should be tried and the excretion from the skin encouraged by means of hot vapor baths, wet packs, or even jaborandi, provided its after depression be counteracted by the free use of some generous wine. Should these fail, relief must be obtained by means of purgation, unless diarrhœa is already present. In uræmic convulsions the inhalation of chloroform, hypodermics of morphine, or rectal injections of chloral and bromide (gr. v–x) will usually ward off a single attack, but will not prevent their return and usually a fatal termination.

Iron, good food and bitter tonics for general anæmia.

4. MORBILLI.

Synonyms.—Measles; masern.

Etiology.—Contagiousness very great, beginning with the prodromal stage; by many supposed from microörganisms found in the nasal and pharyngeal mucus and urine, hence very easily carried in soiled linen and by third persons. Children under one-half year are exempt. Repetitions of the disease are rare, but are authenticated.

Symptoms and Progress.—After an incubation of thirteen days, the (prodromal) first stage, three to five days, appears. This is characterized by coryza, injection of the conjunctiva, sometimes with photophobia, hoarseness and a dry cough. Generally the children do not wish to lie down; the feeble ones alone feel languid in consequence of their loss of appetite, and in such the evening fever may produce delirium. In the beginning of the prodromal stage there is an immediate rise of temperature; but this sinks in one-half to one day to the normal, then increases again to 104°, with morning remissions, until the second stage (eruptive), which begins on the fifth day. The exanthema commences first on the face, on the cheeks or nose, and spreads thence in a day over the whole body, in the form of small, pea-sized, bright or bluish-red, round, irregular spots or patchy rash. These become more or less confluent, but there can always be found interspaces of normal cuticle between them. The lymphatics are slightly swollen. In rare cases we find the summit of each spot crowned with a yellowish vesicle, *morbilli miliaria;* but

usually only the redness increases until the flushed spots become elevated a little above the sound skin. With the completion of the eruption (the end of the first day) the fever reaches its highest point, and thereupon follows a critical decline (crisis), and all the symptoms diminish in severity. From the third day the eruption begins to fade in the same order as it appeared, leaving in its stead a brownish hue, due to the deposition of pigment stain. The tumefaction of the skin diminishes, but the bronchial catarrh increases on account of a similar eruption on the bronchial mucous membrane. During the third, or the stage of desquamation, the epidermis is cast off in fine, mealy scales (similar to bran), and the general condition improves so rapidly that the children are now ready to walk about. The bronchitis alone occasionally persists for several weeks, and requires constant care from the physician.

The following variations from the normal course of morbilli may be mentioned:—

(*a*) Unusual method of beginning the eruption, coming first on the lower extremities, but this is of no importance.

(*b*) Unusually intense exanthema, *e. g.*, marked ecchymosis into the measly patches—*morbilli-hæmorrhagici*—occasionally complicated with severe hemorrhages from the mucous membranes, or diphtheritic affections of the same, *e. g.*, of the conjunctiva, nose, pharynx, larynx, or vagina.

(*c*) Unusual implication of the mucous membranes, in the shape of excessive coryza, conjunctivitis, blepharitis, from the implication of the conjunctiva, or keratitis pustulosa with its complications. Hyperæmia of the glottis may give rise to a continuous irritation, which produces a highly paroxysmal cough, resembling pertussis. Or the abundant secretion of the bronchial tubes may flow into the alveoli of the lung, and result in the lobular pneumonia, which is often found in the youngest children. The desquamation of the intestines sometimes leads to a diarrhœa, simulating dysentery, and difficult to check.

Sequelæ.—(*a*) Chronic bronchitis, with bronchiectasis, lung atelectasis, and pneumonia, which frequently runs a chronic course, predisposing to miliary tuberculosis, caseous degeneration, and a rapidly fatal termination. (*b*) Whooping-cough sometimes

follows measles. (*c*) In scrofulous children, eczema of the face and hairy scalp, purulent inflammation of the middle ear, chronic otorrhœa, or blepharitis, etc.; more rarely, noma occurs.

Prognosis.—Good, on the whole, as the mortality is only five per cent. On the other hand, it is bad in "tuberculous" families, with whom, frequently, pneumonias, caseous degeneration of the lymphatic glands, and secondary tuberculosis occur.

Prophylaxis.—Perfect isolation is only necessary in those families where phthisis has already occurred, or where the children are suffering from a cough.

Treatment.—During the height of the fever cool drinks, as lemonade, and a mildly diuretic expectorant mixture are desirable, *e. g.*:—

(12)

℞. Liq. pot. citratis, ... 30 c.c.
Syrupi ipecac., ... 5 "
Tinct. opii camph., ... 10 "
Succi limonis, ... 15 "
Tinc. gelsem., ... 2 "

SIG.—Teaspoonful every two hours, or as required. H.

If headache annoys, cool cloths are to be applied to head and dilute hydrobromic acid substituted for the paregoric in the annexed mixture. Should further remedies be required, phenacetin (gr. ij–iv) will be found useful.

After the crisis of the disease has passed, for a couple of weeks great care should be taken to keep the children in a room with an even temperature, until the sensitiveness of the skin has disappeared and the bronchial catarrh is entirely recovered from.

Minute doses of morphine in cherry laurel water, and syrup of tolu, will be found helpful in cutting short the paroxysmal coughing which sometimes persists after an attack of measles.

When the cough is exceedingly persistent and caseation of the bronchial glands is feared, the child should be placed upon cod-liver oil, extract of malt and syrup of the iodide of iron, and if possible, taken to the country for a while.

5. RUBEOLÆ.

Synonyms.—German measles; rötheln.

Etiology.—Moderately contagious.

Symptoms and Course.—After a period of incubation of from ten to fourteen days, the prodromal stage begins and lasts a variable length of time, from two hours to as many days. It is, as a rule, without fever, or of very moderate amount, shows swollen lymphatics of the neck, injected conjunctivæ and swollen lids, slight malaise and mild catarrh of the air passages. This is followed by the eruptive stage (one-half to three days) during which the exanthema appears, sometimes with a lively fever of brief duration and sharp itching of the skin. The eruption occurs first on the face and neck, and then over the entire body extremely like an attack of measles, except that it is less circumscribed and less livid in color. With the eruption every trace of fever disappears and in twenty-four to thirty-six hours the child's skin begins to regain its normal color.

Differentiation is often difficult and can only be made from the entire course of the disease. Every trace of fever disappears in twenty-four to thirty-six hours; later the exanthema begins to fade.

The third stage—*desquamation*—is generally wanting or so slight that it is with difficulty recognized.

Prognosis.—Good. There are no sequelæ, unless in overcrowded asylums.

Treatment.—Cool washes to allay the itching of the skin, and a mild febrifuge.

6. PEMPHIGUS.

Synonyms.—Pompholyx acutus contagiosus; febris bullosa; ansteckende schälblasen.

Etiology.—Contagious by contact or through third persons. Infants and little children are especially susceptible, not alone as regards the frequency, but also in the severity of their attacks.

Symptoms and Course.—After an incubation of 4–7 days, the premonitory symptoms of evening fever, restlessness, and sleeplessness appear for 1–3 days. These symptoms disappear on the breaking out of the exanthema, but return before each repeti-

tion of the eruption. This appears chiefly on the face, ears, and around the mouth and eyes, on the hairy scalp, less often on the chest and back, but here we find the largest vesicles. At first it appears as red spots, in whose centre large vesicles appear within a few hours. These vesicles vary in number from three to several dozen, and are oval, always larger than those of varicella, and increase in size from a pea up to the size of a dollar. After-crops follow. The lax vesicles break easily, contain a serous fluid, and are surrounded by a hyperæmic areola. After 8–12 days the old epidermis is cast off, leaving a reddened spot which fades slowly. Rarely under the thin scab of dried epidermis we find a diphtheritic membrane and ulcerations, which have no tendency to heal (pemphigus malignus seu cachecticorum). These have a penetrating odor, and with them are frequently joined affections of the mucous membranes — stomatitis ulcerosa seu diphtherica — with sleeplessness, high fever, and great emaciation. If a cure results, these ulcers cicatrize in 4–6 weeks.

Prognosis.—In general, good. Only with bad air and reduced patients do wearisome diphtheritic ulcerations attack the skin and lead to an unfavorable prognosis from rapid emaciation and reduction of strength.

Treatment.—Baths and powdering the skin. Cachectic children need wine, quinine, good air, and nourishment. Bandages dipped in a solution of carbolic acid or permanganate of potash over the ulcers, or dusting with iodoform and bismuth.

7. INFLUENZA.

Synonyms.—La grippe, etc.

Etiology.—Contagion, from which none are exempt.

Symptoms.—Begins with a fever of varying intensity and the symptoms of gastric disturbance; bronchial catarrh makes its appearance and, as a rule, runs its course in 2–3 weeks; diarrhœa is perhaps the most frequent complication, and complete recovery is often very tardy.

Prognosis.—Good, except with children predisposed to consumption, with whom the cough is apt to persist until the symptoms of tuberculosis appear, with a fatal result.

Treatment.—Chiefly for the bronchial catarrh (see *Bronchitis*); change of air and cod-liver oil when indicated. Phenacetin for fever and restlessness.

8. PERTUSSIS.

Synonyms. — Keuch husten; blauer husten, or whooping cough; tussis convulsiva.

Etiology.—It is epidemic and very contagious, especially in the third stage, infection taking place through the breath and expectorations, and also through third persons or pieces in the wash, hence its spread through schools, children's homes, and hospitals. The contagion undoubtedly resides in a microbe carried from one to another.

Symptoms and Progress.—After an incubation from 2–7 days, the first stage or premonitory symptoms occur (*stadium incrementi*), which lasts from 1–3 weeks, and is characterized by a bronchial catarrh and a teasing, dry cough, with tickling in the throat and a slight evening rise of temperature. Very soon this cough becomes markedly convulsive, occurring in the paroxysms which attend the second stage of the disease (*stadium nervosum*). This is the only one which is diagnostic of pertussis, for in it occur the so-called spasms (3–50 in a day), which are occasioned by the attempts of the child to expectorate the mucus which gathers in the top of the windpipe. These paroxysms are of different duration, according as the mucus which the child attempts to raise is tenacious or fluid, and whether the inspired air becomes carbonaceous or well oxygenated. Changes of temperature, sneezing, anger, joy, or laughing and violent movements of the body are all exciting causes of these attacks, which may be rare or frequent.

As a cough simulating pertussis is heard in caseous degeneration of the bronchial glands, in phthisis pulmonalis, and as the physician is rarely present during the attacks characteristic of whooping-cough, in a doubtful case, to aid diagnosis, one of the paroxysms may be brought on by pressing with one finger the root of the tongue, until coughing occurs, ordinarily beginning with a series of short coughs quickly following each other, and succeeded by prolonged whistling inspiration, during which the child seeks for some support for its head, ordinarily by placing its elbows

SECTION VI.

INFECTIOUS DISEASES OF UNKNOWN ORIGIN.

1. TYPHOID FEVER.

Synonyms, etc.—Typhus abdominalis; enteric fever; schleim fever; continued fever, etc., etc.; differs neither in etiology nor markedly in symptoms from the same disease in the adult.

The Differentiation of the disease from tubercular meningitis, or mucous disease, or hepatic incompetence, is often very difficult, if not impossible in its earlier stages. The appearance of the tongue, the condition of the spleen, and finally a typical typhoid temperature chart, will establish the diagnosis. The range of temperature, it should be remembered, is moderate in the child, and the abdominal symptoms illy defined, and pulmonary complications are liable to confuse the diagnosis.

Prognosis.—The mortality of children is less than that of adults. But death occurs with children earlier than among adults. Should there be complicating parotitis or hypostatic pneumonia, the prognosis is worse, and in diphtheria of the colon, with dysenteric stools, it is still worse.

Treatment.—Largely expectant and symptomatic. Cool baths or sponging are preferable to antipyretics whenever the temperature reaches 103° F. or over. Antifebrin or phenacetin will usually relieve headache and delirium; if not, ice bags may be employed. Good ventilation, preferable by means of an open fireplace, is essential, and the immediate disinfection of all dejecta should never be neglected. Up to the end of the third week all food should be liquid; milk, barley broth, thin chicken soup etc. Salicylate of bismuth will usually control diarrhœa, which is more salutary than otherwise, if it does not exceed two passages a day. Delirium and restlessness from cerebral anæmia are most promptly quieted by chloral and opiates combined.

Typhus and recurrent fevers are the same in the child as in the

adult. The same is true of Asiatic cholera, for whose etiology and treatment the reader is referred to any standard text-books on practice.

2. EPIDEMIC DYSENTERY.

Definition.—A sthenic inflammation of the mucous membrane of the colon, possibly diphtheritic in character, and frequently epidemic at the same time with diphtheria.

Etiology.—Occurs chiefly during, or after a very hot summer, or in tropical localities, but rarely in those under one year; after that, until the fifth year, quite frequently.

Microbic Contagion, from contact with the sick, or by means of inhaling the breath of dysenteric patients, or directly from the use of infected syringes, and also from infected drinking water; thus even the fœtus can be infected from the mother. One attack is no protection for the future, for this dysentery can complicate almost every other disease. Sporadic dysentery, non-contagious, has a much better prognosis, and arises from any direct irritation of the intestines, such as the use of sour milk by nurslings, unripe fruit, etc., or even an accumulation of feces in older children.

Symptoms.—After an incubation of a week to ten days, with or without a chill, diarrhœa makes its appearance, and in a short time increases greatly in frequency, twenty to thirty motions a day, and is accompanied with great straining at the anus, tenesmus, with griping pains in the abdomen, which becomes painful to pressure. At first small quantities of fecal matters may be present in the stools; but the succeeding discharges become glairy, consisting of pure mucus—the so-called white of an egg passage. Sometimes they are uniformly and sometimes partially colored red, from hemorrhage of the colon, constituting the true bloody dysentery. The stools have a mawkish, sourish smell, and differ in appearance according to the degree of the hemorrhage and the distance of the bleeding place from the anus. If a diphtheritic destruction of the epithelium of the mucous membrane has taken place, then the dejections have a carrion-like odor, and are sometimes mixed with shreds of mucous membrane. The stools are then of a dingy or reddish-gray color, and contain considerable pus from the ulcers resulting from the casting off of the diphtheritic

membrane. The tenesmus now occurs at intervals, and children complain only during the attack, unless the ulcerations are deep, when their complaints are constant. In such cases the attempt to give an enema is always difficult, and may occasion convulsions. In the beginning there is either no elevation of temperature or very little, and in severe cases there is a fall; but when there is ulceration, the temperature is always increased, proceeding at times to delirium and convulsions.

Progress.—After four to six days, in the sporadic cases, if no diphtheritic membrane has formed, and after ten to fourteen days in epidemics, the stools again resume their fecal odor and appearance. The mucus and pus, as well as the tenesmus, gradually become less, the appetite improves, and emaciation ceases. But if diphtheritic ulcers have formed, emaciation becomes marked, the fever higher than usual, and violent abdominal pains and vomiting often precede peritonitis, with or without intestinal perforation. Frequently the disease ends in a chronic dysentery, by which is meant a chronic ulceration of a part of the intestine, which may finally heal, with great cicatricial contraction, and sometimes, as might be expected, with stenosis of the intestine. Cessation of tenesmus is not always to be regarded as a favorable symptom, since it may be due to a paralysis of the sphincter.

Death often occurs in these cases, but more frequently it arises from the sequelæ of dysentery. These are caseous degeneration of the mesenteric glands (tabes mesenterica), pyæmia, abscess of the liver, with icterus, marasmus, anæmia, and prolapse of the rectum, from tenesmus.

Prognosis is favorable in sporadic cases. Epidemic dysentery is always unfavorable, and is rendered still more so by the appearance of diphtheritis.

Treatment.—1. All fecal accumulations are immediately to be removed by gr. ss of calomel, repeated every three hours. Then opium is the best remedy, and if possible, should be given by the physician himself, in enemata of a thin lukewarm solution of starch, containing a number of drops of laudanum, equal in number to the age of the child.

2. All drinks should be lukewarm and mucilaginous. Cow's milk is to be avoided, and children at the breast are not to be weaned.

3. Strict attention must be paid to the diet; which should consist only of gummy soups, varying them as much as possible.

4. During the chronic stage use astringent enemas.

5. In epidemic dysentery there must be, moreover, disinfection of the dejections, wash, etc., and in addition to the medication suggested above, the use of the tannate of quinine, gr. iv pro dosi, or the saccharated extract of coto, will be found helpful.

3. DIPHTHERITIS.

Synonyms.—Diphtheria; putrid sore throat; bräune.

Definition.—A constitutional disease, whose local manifestations are most frequently shown in the pharynx, in the form of a membranous, white to ashy gray exudate, on the tonsils, uvula, or pillars of the fauces.

Etiology.—Diphtheria is either primary or secondary in various diseases, as scarlatina, measles, variola, dysentery, etc. In either case the diphtheria may be found in the pharynx, nose, on the conjunctiva, or in the vulva, colon, or any wounded spot on the skin. Diphtheria appears both sporadically, when it is less contagious, and epidemically when the contagion is very great. The contagious matter (microbes) from diphtheritic membranes is spread by means of the breath of the patients, their wash, and their dwellings, especially damp ones, in which the contagion often persists for a long time. Previous throat diseases, as chronic pharyngeal and acute bronchial catarrh, cold weather, or any wounded spot with which the contagious matters come in contact, may act as a predisposing cause. No age is exempt, but diphtheria is most frequent between two and nine years.

Latent Diphtheria.—According to the teachings of Jacobi, diphtheria is transmitted from mild cases of sore throat to the fauces of those predisposed to this disease. If this be true, every sore throat should be regarded with suspicion, as it may be the source of diphtheria to those less fitted to withstand its influences. The investigations of Wood and Formad seem to tend in this direction, for their most careful microscopical examinations failed to find any specific microörganisms in the membranes of diphtheria, in fact, none others than the bacteria and micrococci,

which may be found in membranes produced in similar localities by burning or scalding the throat and windpipes of the lower animals.

Symptoms and Course.—After, possibly, two or three days of incubation, difficulty in swallowing is first noticed. Malignant diphtheria often commences with a chill, succeeded by a sudden rise of temperature (103°–104°). In milder cases the temperature rises quickly and drops to normal in four days, but in more malignant cases it will continue high for weeks, only falling at first with morning remissions.

Diphtheria attacks, by preference, the back part of the mouth, appearing at first as a localized redness of the tonsils, palate, and uvula. At one or more points upon these appears either a curdy white, or a grayish membrane, thickened voice, difficulty in swallowing, and occasionally hoarseness also. An unfavorable symptom is the regurgitation of food, especially liquids, through the nose, due to paralysis of the muscles of deglutition, from inflammatory swelling of the throat. Opening of the mouth is always difficult, but by no means uniformly so. In true diphtheria the cervical lymphatics are always swollen; often there is resulting stiffness of the neck. Similar symptoms with no visible membrane in the throat may be explained by membrane in the nasal cavities—an even more dangerous form of the disease—*coryza diphtheritica*. Also characterized by the escape of a copious, offensive, sanguino-purulent discharge from the nostrils, either one or both.

Again the membrane may spread downward into the larynx—*diphtheritic croup*. If the pharyngeal membrane has been so slight, or so located as to escape the attention of the physician, the diagnosis of this form of diphtheria from catarrhal laryngitis is by no means easy. The temperature chart is often helpful in this matter, for in laryngeal diphtheritis the temperature is apt to keep high, 102°–104°, as a rule, much higher than in catarrhal croup. In diphtheria of the larynx, after thirty-six hours of hoarseness or cough, the unmistakable marks of laryngeal stenosis appear. These increase in intensity, and persist, either with or without slight intermissions, until the false membrane has been coughed out, or the child dies from suffocation.

A diphtheritis of the vagina is observed in measles, and in foundling houses, etc., where there is bad air. This form begins with high fever, hyperæmia and swelling of the vulva, and soon the inner sides of the labia majora are covered with a grayish membrane which, when cast off, is re-formed anew. Faucial membranes in slight cases are shed in one to two days, leaving behind only the mucous membrane slightly thickened, and a cure results. In more severe cases the membranes are not cast off until the seventh or eighth day, and immediately re-form. They always leave behind them, on mucous membranes, a deeply ulcerated wound, bleeding easily and cicatrizing very slowly. Or the process also locates itself on the mucous membrane of the cheeks, gums, nasal cavities, lachrymal duct and conjunctiva, or works downward into the œsophagus, larynx or trachea, even into the finest bronchioles —*bronchitis diphtheritica*. In the severest of these cases the odor from these gangrenous spots is nearly intolerable.

Complications and Sequelæ.—Septicæmia is the most frequent and dangerous of these, often causing sudden death from blood poisoning. Death from asphyxia may occur within twenty-four hours, in diphtheritic laryngitis, from an extension of the membrane into the bronchioles. Hemorrhage, following sloughing of the diphtheritic membranes, is another of the serious and often fatal complications of diphtheria. Albuminuria is by some claimed to be diagnostic of true diphtheria, and if not invariably so, it is extremely frequent, although Kormann thinks the existence of a nephritis with secondary œdema complicating diphtheritis is proof positive of its being a case of scarlatina sine exanthema. Pneumonia is another of the dangers often dreaded, and arises either from an extension of the membrane downward, or more often from hypostatic infiltration of the lungs. Myocarditis and diarrhœa are also to be mentioned among possible complications, and cervical adenitis of varying degree is always present.

Diphtheritic paralysis may appear early in the disease, though as a rule it comes after an apparent cure. Early paralysis must be regarded as a disease of the peripheral nerves; later it arises from implications of the central nervous system by the extension of the morbid process along nerve trunks. The lower limbs are those

most frequently affected, although diphtheritic paralysis may attack an eye, as partial amaurosis, hypermetropia, or as varying paralysis of the innervation of the muscles of the eye. The symptoms of diphtheritic paralysis generally begin in the soft palate and are shown by the snuffling voice, sometimes hardly intelligible, and loud snoring during sleep. A portion of the food, especially fluids pass out through the nose. Examination shows the pillars of the fauces relaxed and the uvula apparently elongated and lying upon the back of the tongue. The paralysis next extends to the larynx. The voice becomes weak, hoarse, unreliable and hollow, and the epiglottis closes only imperfectly, allowing a large portion of the ingesta to enter. Such materials must be coughed out with difficulty, or if they have entered deeply, on account of the diminished sensibility of the larynx, severe bronchitis or pneumonia may result. The most dangerous complication is a simultaneous paralysis of the respiratory muscles, because this renders difficult the removal of the substances which have passed into the larynx. Paralysis of the extremities is usually preceded by a sensation of formication, then the movements of the hands or feet become uncertain and their sensibility greatly blunted. Then their use is lost in part or entirely, progressively from the part first affected, so that the head may fall forward or backward, and, in fact, every muscle in the body may become paretic. In such cases death occurs from paralysis of the heart.

A high degree of anæmia always follows a severe case of diphtheria and this is one of the sequelæ to be carefully watched, even after apparent cure. Such children are pale, weak, and reveal a bellows murmur over the heart (anæmic only), and in the worst cases the pupils are largely dilated, loss of consciousness is frequent, and sudden death may occur in convulsions.

Prognosis.—Not unfavorable in diphtheritis of the pharynx and nose if properly treated. On the other hand, the mortality is $\frac{75}{100}$ in extensions of the disease to the larynx, and other complications—anæmia, pneumonia, etc.—carry off many others of those attacked. The same is true of diphtheritis of the vagina, which usually terminates fatally from blood poisoning. Diphtheritic paralysis has always a good prognosis, since it cures itself spontaneously—except paralysis of the heart, which leads to immediate death.

Prophylaxis.—Separation of the healthy from the diseased children, and energetic treatment of chronic pharyngitis during epidemics of diphtheritis. Some of the editor's friends speak enthusiastically concerning the use of sulphocarbolate of soda—pinch t. i. d.—as a prophylactic after or during exposure. The writer prefers Hoadley's gargle. (Page 106.)

Treatment (*Local*).—There is the widest possible difference in regard to the treatment of diphtheria, among authorities on the subject, but the writer has never found reason to regret early, frequent and efficient local treatment. Whatever views we may entertain in regard to the etiology of the disease, the presence of localized gangrene can but add to its dangers. The throat can at least be rendered aseptic by proper care, and this too often is entirely neglected or so inefficiently done that it practically amounts to nothing. The least painful and most efficient method of treating a diphtheritic throat is by means of swabbing it every two hours with reliable peroxide of hydrogen. This does not stain or affect the sound tissues as do carbolic acid, subsulphate of iron, or permanganate of potash, which often mask the diphtheritic membrane so that we cannot judge of its progress, and it does, more efficiently than any of the remedies previously named, dissolve the diphtheritic membrane and render the surface beneath thoroughly aseptic.

If now we follow with Hoadley's gargle we shall coat these surfaces with a resinous film which largely prevents the entrance of septic germs through these abraded surfaces. At least such is a reasonable explanation of the beneficial effect of these remedies when used conjointly, as long as the membrane reappears. In children large enough to gargle there will be no need for an atomizer, but in those unable to do so, the Hoadley mixture should be used through a hand-bulb atomizer, at intervals not greater than three-quarters of an hour, day and night. Others advise local applications of lime-water, pancreatine, papayatine, lactic acid, etc., for the purpose of dissolving the membrane, and even the electro-cautery. Vaginal diphtheria may be treated by scraping off the membrane wherever found, and applying stick nitrate of silver to the surface beneath. (K.)

(15)

℞. Tinct. myrrh, ... ℥iij
Glycerinæ, ... ℥j
Mel despumat., ... ℥jv
Sat. sol. potass. chlorat., ... ℥iij.

SIG.—Use every thirty minutes.—HOADLEY.

Internal Medication, etc.—If we regard diphtheria as a septic disease, we are justified in pushing the known remedies against such conditions to their fullest possibilities, *e. g.*:

(16)

℞. Tinct. ferr. chlorid., ... 5 c.c
Glycerinæ, ... 10 c.c
Spir. frument., ... 45 c.c. M.

SIG.—Teaspoonful hourly.—H.

Increasing or diminishing the amount of iron with the age of the child, ♏j for each year being an average dose. When laryngeal implication is threatened, the writer places no little confidence in the following prescription:—

(17)

℞. Hyd. chlor. corros., ... gr. j
Am. muriat., ... ℥ss
Spir. frument., ... ℥jv. M.

SIG.—Teaspoonful hourly until stomach or bowels rebel.—H.

although, of course, he lays no claim to its being a panacea, for tracheotomy or intubation may finally have to be resorted to.

After the membrane has ceased to reappear, the hyperæmic throat may be relieved by painting with glycerole of tannin and gargling with very hot water containing a small quantity of chlorate of potash, which should be used internally with caution in this disease, on account of its liability to determine a nephritis in kidneys already overburdened. Strychnia is almost a specific in diphtheritic paralysis, which may require great care in feeding the child on account of its difficulty in swallowing. Small cubes of bread dipped in soup, milk, or other liquid are most conveniently swallowed by such. Secondary anæmia requires the best of food, good air, and little other medication.

4. CEREBRO-SPINAL MENINGITIS.

Synonym.—Epidemic spinal meningitis.

Etiology.—Undoubtedly due to a specific infection, which may be spread by massing large bodies of men, as in army barracks and prisons. Its contagiousness is slight, and how it originates has not yet been settled. The majority of those attacked are children, and of these fewer males than females. Crowded quarters and bad sanitary conditions act as predisposing causes.

Symptoms.—The disease, pathologically, is a purulent or a puro-gelatinous inflammation of the pia mater and arachnoid of the brain and spinal cord. Very frequently small points of suppuration, extravasations or (embolic) softening are found in the substance of the brain. The disease begins without a definite stage of incubation, and generally without premonitory symptoms, but with immediate frightful vomiting, shivering (106°) and convulsions in little children, or pains in the back, head and limbs, until consciousness disappears. If this occurs soon, that is at the very beginning of the attack (the so-called fulminating cases), the pains are wanting, and in such cases generally a fatal termination rapidly occurs. The cervical and dorsal vertebræ are sensitive to pressure, and sometimes this is true of the whole spine, from the head downward. At the same time there is great hyperæsthesia of the skin, the limbs soon become partly paralyzed. The muscles are often tetanically contracted, bending backward the cervical portion of the spinal cord—*opisthotonos*—and when the tetanus or clonic spasms increase there is often loss of consciousness. The pupils are often dilated, but changeable.

Progress.—The chills repeat themselves, and the temperature, with slight intermissions, continues high. The tongue is dry, and at first the bowels are constipated, later diarrhœa, and sometimes albuminuria, occur. The skin is hot and dry by turns, or exceedingly moist, and occasionally showing roseola or petechia, and frequently on the fourth day a herpetic eruption on the face. The spleen is often moderately enlarged, and all these symptoms make it very easy in the beginning to confound this disease with typhus, tuberculosis meningitis, or an acute exanthema. Imperfect reabsorption of a meningeal exudation may produce permanent

disturbance of sight, hearing, or lead to a partial paralysis of the lower extremities. Absorption of pus leads to pyæmia, heralded by a chill. The duration of the disease may be from a few hours to several months, due to complications, which may be acute fatty degeneration of the liver and kidneys, endocarditis, purulent inflammation of the joints, parotitis, pneumonia, chronic hydrocephalus, or suppurative inflammation of the dorsal muscles, etc.

Prognosis.—On an average forty per cent. die; the majority from meningitis; a few from secondary disturbances, and some even later, from chronic hydrocephalus. Death may occur either in a few days or after a duration of several weeks.

Prophylaxis.—Prompt removal of children from the infected places—barracks, orphan asylums, etc.; avoidance of sudden changes of temperature, or undue exertion; and regular mode of living.

Treatment.—(1) Try to diminish inflammation by leeches on the head, cupping along the spine, and cold applications or ice bladders to the head and spinal cord; (2) lessen the fever by cool baths and colder effusions; (3) removal of the constipation by calomel or vinegar enemata; (4) subcutaneous injections of morphine for the pain; (5) wine, iron, etc., for exhaustion, and (6) iodide of potash for the absorption of the exudation, if the child survives.

5. PAROTITIS EPIDEMICA.

Synonyms.—Mumps; Zeigenpeter.

Etiology.—Especially frequent during the second period of dentition, and attacks more boys than girls. It often accompanies epidemics of acute exanthemata, and is more frequent in the spring.

Symptoms.—After an incubation of about fourteen days premonitory symptoms occur. These are chill, with increased temperature, lassitude and loss of appetite; but only in very irritable children convulsions and delirium. In two to three days pain is felt in the region of the ear, and is increased by opening the mouth or swallowing. There is swelling about the parotid without redness, and if the submaxillary lymphatic glands swell at the same time, not only the region of the ear and cheeks, but also the side of the

neck, is greatly enlarged, while the subcutaneous cellular tissue on that side may become œdematous up to the ear, and pits on pressure. Opening the mouth is hardly possible, speech is indistinct, and the head bent to one side. Very rarely the other parotid is affected a few days later, in a like manner, the height of the inflammation falling from the second to the sixth day. Very rarely it proceeds to induration or suppuration, and opens externally into the external auditory meatus or into the middle ear (difficulty of hearing and deafness from perforation of the membrane of the drum), but it generally ends in resolution in a week. The well-known simultaneous inflammations of the testicles and ovaries in adults is not often observed in children. The possible complications are brain symptoms, in consequence of the disturbance of circulation, temporary facial paralysis, from the pressure of the inflamed and swollen gland, which may also remain permanently indurated after suppuration.

Prognosis.—Very good.

Treatment.—Warmth over the parotid region. If there is great swelling or cerebral symptoms use leeches or scarification, and when there is induration iodine or cod-liver oil. When suppuration has taken place employ poultices, of which muriate ammonia and aconite leaves (℥ss–℥j) make one of the best. When pus forms the cavity should be opened and treated antiseptically.

SECTION VII.

ENDEMIC NON-CONTAGIOUS DISEASES.

1. INTERMITTENT FEVER.

Synonyms.—Malarial fever; febris intermittens; wechsel or kaltes fieber; chills and fever.

Etiology.—No age is exempt from intermittent fever; even the fœtus in utero can be infected from a malarious mother, as may

also the infant by the milk of its nurse (K.). The child's organism is more easily affected than an adult's, and one attack predisposes to others. The infection takes place by means of contaminated drinking water, or the breathing of air which contains specific microörganisms, and consequently the disease is confined to certain districts, especially swamps, overflowed lands, etc., where these definite organisms are produced. By deepening the rivers, preventing their frequent overflow, and cultivation of the country, the disease can be made to disappear, as has been done largely in the older parts of the country.

Symptoms and Progress.—In children above two years the disease runs the same course as with adults. Neuralgias have also been observed, especially of the trigeminus, with a typical termination as in the adult, but in children under two years the course of intermittent fever is different. In these latter the stage of incubation is as indefinite as usual, lasting from a few hours up to several weeks, and the attacks are generally quotidian, without being confined to any definite point of time. Tertian and quartans are rarer, and abortive attacks are common. The chilly stage is usually replaced by repeated convulsions (one quarter to one hour) with coma, small pulse, coldness of the skin, livid extremities. During the attack the temperature as a rule reaches 105° F. (40.5 C.), the pulse becomes full and strong, producing great excitement and restlessness, and a flushed appearance, for two to four hours, after which very frequently we have none or only very slight perspiration. The enlargement of the spleen is greater than in the adult, and can only be confounded with lardaceous degeneration, syphilitic gummata, or leukæmia. In children also the malarial cachexia appears early, after first or second week, producing anæmia, weakness, loss of appetite, emaciation, and hence frequently mistaken for tuberculosis, or caseous degeneration of the glands, etc. In addition there may be tumefaction of the liver, diarrhœa and œdema; with a high degree of cachexia the dark brown pigments appear in the blood (*melanæmia*).

Prognosis.—Not entirely favorable for children under two years, especially in those localities where the fever appears in a malignant form, and if the right diagnosis is not early made.

Prophylaxis and Differentiation.—Avoidance of evening

exposure in swampy localities, and drinking water from the same places.

It should always be remembered that gastric disturbances, nausea, anorexia and epigastric distress with young children, often replace the chill; with others a daily convulsion may be substituted for the cold stage, and the fever is more persistent, and less apt to terminate with the typical sweating stage. Again an abdominal neuralgia closely resembling colic may appear nightly, and resist all ordinary treatment until its malarial origin is recognized. Enlarged spleen is considered, by some, as absolutely diagnostic.

Treatment.—As with the adult the cinchona preparations are our most reliable remedies. The dose should be regulated in accordance with the age of the child, and should, if possible, be so administered that the full amount should be given at least two hours before the expected paroxysm. When the obstinacy of the child prevents this, quinine inunctions (℈j to ℥j lanolin) should be resorted to, unless your little patient can be beguiled into taking quinine tannate in the agreeable chocolate lozenges in which it can be obtained. A single large dose of quinine, preferably the bisulphate, may be given in rectal suppository, but this method is not adapted for continued use. If possible, the child should be removed from the malarious district, but when this cannot be done, it should be kept on small doses of arsenic, Fowler's solution, to prevent the occurrence of malarial anæmia, and the splenic complications so frequent after chronic malaria.

(18)

℞. Quin. sulph., ... 1 gm
Am. glycyrrhizin, ... 2 "
Simple syrup, ... 60 c.c. M.

SIG.—Teaspoonful every hour until the desired dose has been taken.—CURTIS.

2. ACUTE ARTICULAR RHEUMATISM.

Etiology.—The epidemic influences which undoubtedly affect the appearance of rheumatism are as yet very nearly unknown, except that they are especially active in spring and autumn, generally accompany sudden changes of the atmospheric conditions,

and follow colds, wettings, and living in damp dwellings. During childhood acute rheumatism is quite rare, but no age is absolutely exempt. Arthritis scarlatinosa follows an attack of scarlet fever very often. (See *Scarlatina.*)

Symptoms are the same as in adults, as is also the tendency to relapses. The course of the disease, in consequence of its less intense type, is shorter, and if there are no complications ends in fourteen days. Swelling of the joints in children never proceeds to suppuration; but heart complications are very frequent, thirty to forty per cent. These are pericarditis, endocarditis, and the resulting valvular disease, which materially delay a cure, and threaten life by emboli, pyæmia, etc.

Treatment.—Morphine, and wrapping the joints in cotton batting after they have been rubbed with—

(19)

Gaultheria Liniment.

℞. Olei gaulth., ... ℥ss
Spir. chloroform, ... ℥ss
Lin. saponis, ... ℥iij. M.

SIG.—To be applied freely.—H.

The cotton wool keeps the parts at an even temperature and prevents all motion, which is painful in articular rheumatism. Salicine, gr. iij–v, with minute doses of codeia has proved an excellent remedy with the writer. When cardiac complications supervene we must resort to the use of mustard and blisters externally, and the iodides and digitalis internally.

3. TUBERCULOSIS, ACUTE AND CHRONIC.

Etiology.—Still in dispute, although the presence of the bacillus tuberculosis may be considered pathognomonic. Miliary tuberculosis, or something very closely allied to it, may be produced by the injection into the circulation of bits of rubber, globules of mercury, or most perfectly from caseous emboli. Hence, chronic suppuration, wherever located, may eventually give rise to miliary tuberculosis, perhaps, most frequently from caseous glands, cervical, bronchial, or peritoneal. Tuberculous children do not directly

inherit tuberculosis, but only a predisposition thereto, which may be excited by cold, deficient clothing, damp and dusty dwellings, pneumonia sequelæ, etc.

Pathological Anatomy.—Same in the child as in the adult.

Symptoms.—May reasonably suspect tuberculosis in child with extreme paleness of face, bluish sclerotics, progressive emaciation, cold extremities, and afternoon rise of temperature. The spinal symptoms of tubercular meningitis and tabes mesenterica, can be found under their appropriate heads. (See page 121).

Tuberculosis in children, is more apt to run a rapid course with an early fatal termination, than with the adult, but every supposed case of tuberculosis does not necessarily have a fatal termination.

Prognosis is always bad, especially after the appearance of coolness of the extremities and nose, œdema of the joints and thrush. An increase in the weight of the body makes the prognosis somewhat better, at least for the present. Meningeal tuberculosis almost always ends fatally within a short time, and even when there is an apparent cure, there always remains a tendency to a relapse.

Prophylaxis.—In phthisical or tuberculous families, the children ought always to have a healthy wet-nurse, and later, scrofulosis is to be guarded against by means of nutritious diet, good air and cold bathing. If scrofulosis has already broken out, especially where the lymphatic glands are already caseous, it must be treated in the most energetic manner possible. In such families, all bronchial catarrhs, pleurisy, or hæmoptysis, especially after measles and whooping-cough, as well as otorrheas (caries of the temporal bone), and suppuration of the bones, are to be esteemed serious.

Treatment is mainly dietetic and hygienic, and consists of the most nourishing food, eggs, cream, raw beef, and the best of air, cool and dry, in which to daily practice forced inspiration, under the doctor's directions. The Adirondacks, Upper Michigan and Colorado, have a well deserved reputation for the relief of incipient phthisis. Tuberculosis of the bones, demands early and radical surgical treatment.

SECTION VIII.

DISEASES OF THE NERVOUS SYSTEM.

(A.) THE BRAIN AND ITS MEMBRANES.

1. ENCEPHALOCELE.

Synonyms.—Meningocele seu hydroencephalocele; gehirnbruch; gehirnwasserbruch.

Differentiation.—A tumor, from the size of a hazel-nut to a child's head, generally found on the occiput, more rarely at the top of the nose, or at the greater fontanelle. Around the periphery of the tumor a circular opening can be felt beneath the tense and thinned integument, unless this has ruptured during birth. Within the tumor cerebral substance can be felt, either with or without fluid. Compression reduces the size of the tumor, but causes pain and sometimes convulsions.

Prognosis.—When life is preserved, chronic meningitis usually follows, with a fatal result in after years; and even if recovery ensues, the intellectual faculties remain defective.

Treatment.—Attempts at replacement usually fail, especially when there is a large collection of fluid in the sack. Tapping, in such cases, sometimes produces relief, but is very apt to cause convulsions. When successful, it must be frequently repeated, and small amounts drawn off each time. Failing in this, compresses, or a perforated metal plate, should be worn over the tumor.

2. ACEPHALIA, HEMICEPHALIA, MICROCEPHALIA, ETC.

Headless monsters—acephalia—completely deficient of brain except the medulla oblongata, have been born, generally with other malformations or imperfectly developed elsewhere. They may be born alive, but are always non-viable. Partial deficiencies in the brain, especially of the larger hemispheres or the smaller parts of the brain, are sometimes found associated with a defective formation of the bones of the head or face—hemicepha-

lia—generally where the meningeal sack, which is filled with water, has ruptured during birth. Microcephalic children are born with a small skull, whose sutures are often strongly united at birth, and a small, though normally formed brain give them a hideous appearance. The forehead is absent, the arch of the skull is flattened, and the nose, from its relatively large size, projects well forward, like the bill of a parrot. Viable, but generally, though not always, imbecile. And, finally, a less marked degree of microcephalia is acquired by a premature ossification of the sutures of the skull after birth. These unfortunate, because half-imbecile children, may attain a great age, though deficient in intellect and speechless if their cranial capacity is less than 28 c.c.

3. CYCLOPIA.

Monophalmi are the hideous monsters which result from the development of but one-half of the cerebrum. This is always associated with arrested development of the face and cyclopia. They may live, but are always imbecile.

4. HYDROCEPHALUS.

Synonyms.—Water on the brain; wasserkopf.

Definition.—In its widest sense, hydrocephalus embraces all accumulations of serous fluid within the cavity of the skull.

Varieties.—Internal or ventricular, or external (arachnoidean), œdematous, etc., or congenital, acquired, symptomatic, etc.

Frequency.—Of 200 cases, Steiner found 100 internal, 80 œdema of the pia mater, 10 external (between arachnoid and dura) and 10 were simple cerebral œdema.

Etiology.—Either congenital or acquired, the first usually internal, and according to Meigs, arising from inflammation of the membranes lining the ventricles, similar to that of the peritoneum, which produces ascites. May also be due to tumors at the base of the brain. (See *Tubercular Meningitis.*)

Pathological Anatomy.—Integuments are tensely stretched over the enlarged cranial bones, which sometimes distinctly give fluctuation of the fluid beneath, for the bones are either uniformly

thinned or actually wanting in spots where only membranes can be found, especially toward the occiput (craniotabes). On opening the skull the enlarged brain protrudes *en masse*, with flattened convolutions and leveled sulci and gyri. The walls of the distended ventricles are greatly thinned by stretching, very easily torn, and sometimes actually perforated—Steiner once having seen the foramen of Monroe distended sufficiently to pass an egg, optic thalami and corpus striata flattened, the crura separated and cerebellum crowded up against the bones. The brain structure is lardaceous and dense with white fat-like spots. (Lamb.) Fluid varies from four ounces to six pounds.

Symptoms.—Congenital hydrocephalus produces dystocia, and if sufficiently great may require puncture to permit birth. If less in degree the child may live and show all the characteristic malformations of hydrocephalus.

Acquired hydrocephalus usually begins with symptoms strongly resembling those of tubercular meningitis, viz., crying, vomiting, headache, fever, possibly delirium, and partial paralysis, especially of sight, the pupils becoming dilated and fixed, or nystagmic, with best vision in the bright sunlight. Hearing is generally unaffected, and pulse and respiration unchanged. Appetite often voracious and capricious, though digestion remains normal. Acquired hydrocephalus never produces the very great deformity of the congenital variety, because the sutures become more or less ossified, but the head is elongated antero-posteriorly, and if the fontanelles have not closed they project outward, and often pulsate with each cardiac impulse. Congenital hydrocephalus often produces the most hideous deformities by its unarrested progress, the temporal bones becoming so oblique that the tips of the ears can no longer be seen from above. The forehead, likewise, bulges forward, the orbits become shallow, and the eyes project forward and look downward, or become strabismic, and the attempt to establish collateral circulation enlarges and makes turgid the veins of the forehead and scalp.

Prognosis.—Life may be long preserved, and the child even reach maturity, if the amount of effusion is small, and no intercurrent disease complicates; for the majority of deaths take place not directly from hydrocephalus, but from subsequent

bronchitis, pneumonia, or the exanthemata. Coma, convulsions, exhaustion, and pyæmia, also occasion a number of fatal cases.

Treatment, as yet, is very unsatisfactory. The general health of the child is to be preserved, its diet regulated, and intercurrent disease carefully watched. Tonics and mild diuretics are theoretically indicated, but yield very satisfactory results. Tapping has been successfully resorted to by Keen and others.

5. HYPERTROPHY CEREBRI.

Varieties.—Either congenital or acquired, and either general or partial.

Etiology.—Both rickets and scrofula predispose. The skull is unduly large and prematurely ossified in the congenital form; the acquired form can be diagnosed from hydrocephalus only before the closure of the fontanelles, and by the absence of the characteristic deformities of hydrocephalus.

Symptoms.—Intellect varies from fairly good to imbecility; especially in later stages, from occurrence of "cretinism."

6. HYPERTROPHY AND SCLEROSIS OF BRAIN.

Occurrence.—Fortunately rare in America.

Pathological Anatomy.—Increase in connecting nucleated substance—neuroglia—the brain becoming hardened like cartilage, with subsequent atrophy.

Differential Diagnosis.—Enlargement, chiefly over ears; eyes not strabismic. Often very difficult to distinguish from hydrocephalus or meningitis.

Etiology.—Rickets, congested brain, bad dwellings, and poor air—lead poisoning.

Symptoms.—Complicated, sooner or later, with convulsions, paralysis, blindness, or neuralgia.

Duration.—Very uncertain, and prognosis always bad.

Treatment can only be symptomatic.

7. ATROPHIA CEREBRI.

Is always secondary and associated with some other disease, such as general atrophy subsequent to cholera infantum, or thrombosis of the cerebral sinuses, etc.

Its symptoms are those of cerebral anæmia (which see), viz., depression of the anterior fontanelles, overriding of the cranial bones, threatened collapse, etc.

Prognosis.—If due to simple inanition it is fairly hopeful; from all other causes very bad.

Treatment.—See *Cerebral Anæmia.*

8. IDIOCY AND RETARDED MENTAL DEVELOPMENT.

Occurrence.—By no means infrequent with children.

Etiology.—Arises either from—

(*a*) Arrest of growth (microcephalic);

(*b*) Arrested development, *e. g.*, feeble-minded; or

(*c*) Disease, *e. g.*, hydrocephalus, sclerosis, etc.

Varieties.—(*a*) Transient, as post-typhoid, measles, choraic, or (*b*) Congenital, (*c*) Acquired; generally associated with some bodily defect, such as deafness, eclampsia, heart disease, etc. Differentiation is not always easy, but as helpful towards this, it should be remembered that in the normal development of children a child follows light after two weeks (smiles about same time). Natural squint for one month; later, abnormal. Holds objects in hands at three months; knows faces by three to four months. Holds up head about three months, and always keeps tongue in mouth, if bright. Recognizes names at eight to nine months; able to stand on feet at nine months; talks from nine to sixteen months. Anterior fontanelle should close at same time when child is able to walk (about eighteen months). Any marked variation from these data constitutes backwardness, and from this to absolute idiocy.

Treatment.—The only satisfactory treatment of these cases is that by specially-trained teachers in public institutions, or in private schools for the weak and feeble-minded, which accomplish wonders, even in very unpromising cases.

9. ANÆMIA CEREBRI.

Synonym.—Hydrocephaloid irritation of the brain.

Etiology.—Clinically convenient to discuss at this point, although it is really a symptom or sequela of any disease in childhood which leads to a high degree of emaciation, or great depletion of the fluids of the body (cholera infantum, chronic diarrhœa, hemorrhage, etc.).

Symptoms.—Restless boring of the occiput into pillows; incessant movements of the head to and fro, hence baldness of the occiput; clutching at the head and scratching of the face. The eyeballs are rolled upwards and not infrequently there are rigid flexions of the upper and lower extremities—thumb in fist, etc. There is also stiffness of the neck, which may escape attention until the child is placed in the sitting posture. These children often moan pitifully and incessantly until they become too feeble to do so any longer. The typical pulse and respiration of tubercular meningitis will serve to differentiate between the two diseases.

Prognosis.—Bad, but not necessarily hopeless.

Treatment.—Primarily must be directed to the initial disease, but much in the interval may be done for the relief of the child. All depleting measures must be avoided, in spite of the popular impression in these cases that the disease has gone to the head and that leeches and ice-bags are required. On the contrary, the frequent use of stimulants, wine, coffee and opiates will yield the best results. Caffein and strychnia are also valuable.

10. INSOLATIO (SUN STROKE).

Symptoms.—Headache and reddening of the face, neck and arms—erythema—after long exposure to sunlight. In the course of twelve hours there may appear loss of consciousness, furious delirium, injection of the conjunctiva, contraction of the pupils and a strong pulsation of the carotids with fever. The pulse is quickened and rhythmic.

Progress.—Usually in from one-half to two days deep sleep ensues, from which the children awake conscious and without

fever. More rarely death occurs early with increased stupor—œdema of the brain and œdema of the lungs.

Prognosis.—Almost always favorable.

Treatment.—Ice or cold effusions to the shaven head; vinegar enemas. Calomel after the return of consciousness.

HYPERÆMIA CEREBRI.

Etiology.—Strictly speaking a symptom and not a distinct disease. May be premonitory of meningitis, apoplexy or hypertrophy, or result from arrested circulation, due to cardiac or pulmonary lesions, facial erysipelas, etc.

Symptoms.—Tension of the fontanelle if it is still open, but if it has closed there is marked injection of the retina (ophthalmoscope). Redness of the face and conjunctiva may also be present or absent. The cerebral disturbances in high fever and acute infectious diseases must not be regarded as hyperæmia of the brain, but as the effects of the fever or toxæmia.

Prognosis varies according to the fundamental lesion. Always doubtful.

Treatment.—Ice bladders on the head, local bloodletting, lessening the heart's activity (veratrum, digitalis, etc.), with large doses of calomel and cutaneous derivatives; ergot in full doses.

11. MENINGITIS CEREBRI SIMPLEX ET PURULENTA.

Etiology.—Commotio cerebri, traumatic injuries of the skull, traumatic erysipelas, or insolatio, or the influence of great cold, excessive mental exertion, or the extension of a neighboring inflammation from the ear, more rarely from the eye, or venous thrombosis.

Symptoms.—Usually vomiting, though this may be absent, violent headache, retracted abdomen and increased temperature, especially of the head; convulsions. The disease usually reaches its height in one to two days, and is characterized by furious delirium and often violent convulsions and rigidities. The features are wild and the pulse irregular, frequently slow.

Course and Pathological Anatomy.—Recovery is pos-

sible, though rare. A favorable termination may be hoped for with an abatement of the more violent symptoms. Extreme emaciation and persistent feebleness of the mind not unfrequently attend cases which survive. Death usually in three to six days, and the autopsy shows the dura and pia covered with a yellowish-green fibrinous or purulent exudate. Or adhesions between the pia, the arachnoid and the cortex of the brain, the former appearing as a dense membrane.

Prognosis.—Poor.

Treatment.—If any is hopeful, it might be on the line of mercurial inunctions, oleate or blue ointment, to the shaven scalp two or three times daily, with cold affusions or ice in the intervals. Ergot and bromides in large doses may relieve the headache and delirium.

12. TUBERCULAR MENINGITIS.

Synonyms.—Meningitis tuberculosa; morbus Whytii; acute hydrocephalus.

Definition.—A basilar meningitis produced by a deposit of miliary tubercle in the intima of the vessels of the pia mater.

Symptoms and Course.—Prodromal are usually obscure and vary greatly in severity; gnashing of the teeth, starting in sleep, and pain in the forehead are often noticed. Frequent vomiting, without any relation to indigestible food, is a suspicious symptom, especially if to this be added increasing headache and irregular evening exacerbations of fever. The pulse now becomes quickened; previously it is curiously irregular, and sometimes there is delirium, especially at night. The countenance is flushed, sleep is disturbed and broken with a sudden sharp cry—*cri encephalique*. Or there may be somnolence, clutching at the hair, and irregular twitching. In a few days the neck becomes rigid—most marked when the child is sitting—with later general opisthotonos. Or there may be unilateral facial paralysis, the mouth dropping on one side. The eyelids are half closed, the conjunctivæ injected, and the pupils, when visible, unequally dilated, and often showing a hazy zone about the edge of the iris—*Skeer's line*. With this may be associated difficulty of hearing and slowness of apprehension, the child answering only after repeated questionings, or not at all.

About midway in the disease the pulse becomes slow (60–40) and wavy, while the temperature continues high. If the fontanelle is open it is protuberant—effusion into the ventricles of the brain—and respiration drops to ten to twelve in a minute. The course of the disease is perplexing from its apparent improvement at times, when the appetite returns, consciousness is normal, etc., but these are usually fallacious, for they precede deepening coma and often hemiplegia. The child loses control of its sphincters, the face is pale or livid, and pressure upon the skin leaves persistent redness behind—*tache meningeal.* Temperature high. The average duration of the disease is about fourteen days, which may be extended to twenty, death, as a rule, resulting either from eclampsia or from œdema of the lungs.

Differentiation and Prognosis.—The diagnosis of the onset of tubercular meningitis is often difficult, if not impossible. In certain of its symptoms it closely resembles gastric catarrh, in others cerebral hyperæmia, and in the early course of the disease it may easily be mistaken for typhoid fever (*vide* p. 98). The relation of pulse to respiration and temperature should be carefully observed, as an aid to this differentiation. Vomiting, constipation, and the retracted or scaphoid belly, are among the indicative later symptoms, and when the ophthalmoscope may be used it may reveal tuberculariza tion of the retina also. Unfortunately, in the great majority of these cases the diagnosis may be confirmed by an autopsy.

Pathological Anatomy.—Usually an increase of fluid in the ventricles of the brain, with infiltration of contiguous parts with serum. Pia at the base of the brain covered with a fibrinous exudate, and shows by transmitted light along its blood-vessels disseminate or coalesced reddish-gray nodules from the size of the point of a pin to well-marked patches. Associated with this may be caseous degeneration of the brain-substance and localized hemorrhage, and very rarely there is cicatricial thickening of the cerebral membrane. Miliary tuberculosis of other organs—liver, bronchial glands, spleen, etc.—can usually be demonstrated.

Treatment as yet is extremely unsatisfactory. The earlier methods of blistering, purging and mercurials are useless. Gibney reports a remarkable series of recoveries under large doses of

ergot and the bromides. Iodoform inunctions to the shaved head are highly spoken of by competent German authorities, but neither of these methods have produced any permanent results in the hands of the writer.

13. ENCEPHALITIS, or inflammation of the brain substance, either with or without the formation of abscess, differs in no respect in the child from its course in the adult. The same is true of

14. PACHYMENINGITIS INTERNA HEMORRHAGICA.

15. HEMORRHAGIA CEREBRALIS ET CEREBRO-MENINGEALIS.

16. EMBOLISM OF THE CEREBRAL ARTERIES.

17. THROMBOSIS OF THE CEREBRAL SINUSES.

Etiology.—Marasmic conditions (five-eighths of all attacks), after Asiatic cholera, or cholera infantum, with atrophy of the brain, post-typhoid fever, or profuse suppurations. Further arises from compression of the sinus, or veins of the neck, of the superior vena cava, by enlarged lymphatic glands or abscesses, or from inflammatory processes in the neighborhood of the sinus—over one-fourth of the attacks in children—especially from caries of the temporal bone, ozæna, or ecthyma of the head.

Symptoms.—Sudden loss of consciousness, somnolence, tetanic contractions of the muscles of the neck and back, tetany of the fingers and toes, nystagmus, and possibly paralysis of the facialis and oculo-motorius, and finally embolism of the pulmonary arteries. According to Gerhardt its location may be diagnosed as follows:—

1. Less tension in the external jugular vein of one side than the other denotes a thrombosis of the transverse and inferior petrosal sinuses of the same side.

2. A circumscribed, œdematous tumor behind the ear denotes a thrombosis of the transverse sinus and of the veins back of the ears.

3. Venous hyperæmia of the fundus of the eye by ophthalmoscope, and slight exophthalmus and œdema of the upper eyelid, or of the whole half of the face, denote most frequently a thrombosis of the cavernous sinus. In addition, there are also the symptoms

of irritation or paralysis of the ophthalmic branch of the fifth nerve, and the nerves of the muscles of the eye, although the thrombosis of transverse and inferior petrosal sinuses also present the same symptoms.

4. Cyanoses of the face and tension of the anterior fontanelle, with circumscribed perspiration of the forehead and nose, with epistaxis, indicate thrombosis of the superior longitudinal sinus, or bilateral thrombosis of the transverse sinus.

Course.—The formation of a thrombosis is always accompanied with an elevation of temperature and a quickening of the pulse in marasmic children, with whom death occurs in from one to a few days. In inflammatory thrombosis death sometimes does not take place before the twenty-first day. Recovery in the latter case is possible, as has been proven, by organization of the thrombus, fatty degeneration, and subsequent canalization of the vessel. Even in embolic infarct of the lungs this may happen, provided the embolus was not septic.

Prophylaxis.—Preventing collapse, if there is diarrhœa (see *Cholera Infantum, etc.*), careful treatment of the suppuration of the middle ear.

Treatment in inflammatory thrombosis should be the application of ice to the head, and the internal use of quinine. Wine, ether and musk are indicated in the marasmic variety. Aromatic spirits of ammonia will also be found serviceable.

18. CEREBRAL TUMORS.

Etiology.—Either congenital or acquired, and may be either cysts, gliomata, enchondromata, entozoa, aneurismic, sarcomata, carcinomatous, or most frequently syphilitic gummata, or caseous tubercles.

Symptoms.—Resemble exactly those of the adult.

Pathological Anatomy.—Localized caseous degeneration closely resembles the like affection of the bronchial glands, and may be distinguished at the autopsy from cerebral abscess by the absence of pus in the tuberculous spots (K.), which are, as a rule, located in the peripheral, gray substance of the brain, which becomes adherent to the pia and dura. They are also found in the

corpora striata, and may calcify, or cicatrize, but more frequently terminate life by the occurrence of secondary miliary tuberculosis of the meninges, lungs or bronchial glands. Cerebral carcinoma is rare in children, and when seen is always medullary, and generally primary.

Symptoms as with the adult, vary with the location of the neoplasm.

Treatment.—Palliative, or operative, according to the location of the growth.

(B.) DISEASES OF THE SPINAL CORD AND ITS MEMBRANES.

1. SPINA BIFIDA, OR HYDRORRHACHIS,

Is a congenital deficiency in the bony covering of the spinal cord, appearing as a fluctuating tumor, for the membranes are intact, usually located in the sacral region, though it may also be cervical. Harelip, extrophy of the bladder, and other congenital malformations are frequently associated. Spina bifida may consist of merely a longitudinal slit in the bones of the spinal column, or a broad, pedunculated tumor, according to its location, with greater or less absence of the vertebræ which should cover it. It may be flat, ovoid, pear-shaped, or like a tail, and is covered either with normal or atrophic cuticle, or this may be entirely gone, the spinal cord covered only with its arachnoid and dura. These may be ruptured during birth, or in utero. Spina bifida fluctuates, and contains the spinal fluids, in which, especially if the cutis is absent, one can observe respiratory movements. The spinal cord may run normally, but when there is a division of the lower lumbar vertebræ a part of the cauda equina is generally contained in the tumor. By pressure the tumor is always somewhat lessened, but at the same time hydrocephalus, when it is present, is increased. Pressure frequently produces convulsions, and is always painful.

Progress.—If the sack has been ruptured during birth death soon follows, from meningitis spinalis suppurativa ; but if the child is born alive, with the coverings preserved, they may become gan-

grenous, and end life by septic meningitis. Or life and the coverings may remain intact and the latter gradually thicken, and sometimes paralysis of the bladder, rectum, and feet intervene thereafter. Very rarely is life preserved for a term of years.

Treatment.—Repeated punctures, with the withdrawal each time of a small amount of fluid and the injection of diluted tincture of iodine, in the hands of Dr. Brainard, gave many reported recoveries. Others have not been so fortunate, their cases dying from spinal meningitis. Small projections may be operated upon, but all that can be done with the larger ones is to cover them with collodion and protect from external injury.

2. TUMORS, ETC.

Other tumors of the cord are met with, due either to hyperplasia of the gray substance, or external neoplasmata, or joined or partially developed twin births. There is also a very rare form of tumor, consisting of hypertrophied Luschka's glands.

Hyperæmia, inflammation and hemorrhage into the cord present in the child the same symptoms and require the same treatment as in the adult, hence hyperæmia, spino-meningealis, myelitis, hemorrhagia spinalis et spino-meningealis need no extended discussion here.

3. NEURALGIÆ.

Are frequently met with in childhood, especially frequent are migraine and the abdominal neuralgia previously referred to (page 53). Megrim may be differentiated from ordinary bilious headache by the absence of previous indigestion, foul tongue, etc., by the periodicity of megrim, its sudden onset, disturbances of vision, hearing, etc., and by its abrupt cessation and excellent health in the intervals between its paroxysms. It undoubtedly is a neurosis and often hereditary. Its treatment should be both prophylactic and alleviative. The latter can usually be promptly accomplished by means of full doses of antipyrine or antifebrin, in aromatic spirits of ammonia and water, or fluid ext. ergot (ɱxv–xx). The prevention of the return of these attacks requires regulation of both diet, manner of life, and studies by the

physician, for otherwise these attacks become a settled habit, which lasts for a lifetime, often a long one, for they have no appreciable effect in shortening life.

Pleurodynia, or intercostal neuralgia, is often malarial in origin, and can be promptly relieved by full doses of quinine and menthol lotion.

Cardialgia—neuralgia cardiaca—may be caused by acute indigestion, malarial poison, or in anæmic girls before menstruation. Similarly *neuralgia vesicalis* is caused, as well as from stone in the bladder, vesical catarrh, thread-worms or masturbation.

Treatment.—Pro re nata.

(C.) NEUROSES OF MOTILITY.

1. TETANUS TRAUMATICA.

Traumatic tetanus is, as might be expected, frequent with boys, with whom the symptoms are the same as in adults.

Prognosis is more favorable than in adults, or in the tetanus of the newborn. (See page 35.)

Treatment.—Morphine, woorara (0.01–0.25 per dose), and extract calabar bean, are best administered subcutaneously. The removal of foreign bodies from wounds, ears or nasal cavities should also be carefully attended to.

2. ECLAMPSIA.

Synonyms.—Convulsions, Krämpfe; fits.

Definition.—Tonic or clonic spasm of the voluntary muscles, either in whole or part, with loss of consciousness.

Etiology.—The causes of eclamptic attacks in children are so numerous, that it would be impossible to mention them all in a work like this, but they can be conveniently divided into (*a*) thermic, (*b*) toxic, (*c*) symptomatic, and (*d*) reflex. Such attacks are seen most frequently between birth and the completion of dentition. Incomplete eclamptic attacks—"inward fits"—often attend indigestion with flatulency and colic, especially in bottle-fed babies. Eclamptic attacks are most common with rachitic and illy-

nourished children, and in the so-called neurotic families, where convulsions are hereditary. Symptomatic or reflex convulsions may be produced by continued pain at any point, or from pressure on the head during birth, tubercular or simple meningitis, craniotabes, etc. Toxic eclampsia follows alcohol and other narcotic poisoning, and is often seen in the prëëruptive stage of the exanthemata, though here possibly it is due to the high temperature as well. A toxic convulsion in children often replaces the malarial chill of the adult, and the same may be seen in pneumonia, etc. Breast milk, disordered by anger, etc., on the part of the mother, may do the same, and auto-poisoning, from the production of toxic leucomaïnes in the intestines, is undoubtedly the cause of not a few of the convulsions of early childhood. Thermic convulsions are liable to occur whenever the child's temperature reaches 104° F., or over.

Symptoms.—The mildest form of eclampsia is that in which there is a slight drawing to one side of the eyeballs, quivering of the muscles of the face—risus sardonicus—or twitching of the extremities during sleep. Or the child may have a veritable attack of "night terror," awaking screaming and bewildered, for a variable length of time. If the causes of these attacks be not removed, they are repeated with greater frequency, until at last a true eclamptic attack appears. An ordinary eclamptic attack usually consists of several convulsive paroxysms, with intervals of unconsciousness and insensibility. During these all the voluntary muscles may become rigid or twitch, the teeth gnash, the eyeballs roll, and foam run from the mouth. Respiration is irregular and quickened from implication of the glottis and the inspiratory muscles, and death may ensue from asphyxia. Generally, however, the spasm of the glottis relaxes under the accumulation of carbon dioxide in the blood, and life is thus provisionally prolonged. The urine and feces may be involuntarily passed. An eclamptic attack ordinarily ends in sleep or coma, proportionate in length to the previous attack, from a few minutes to a half hour or more.

Prognosis.—Milder attacks frequently repeat themselves, if the cause persists, while the severer attacks may come but once. They may terminate in immediate death, though this is the exception rather than the rule. It may be said, in general, that the younger the child the more unfavorable the prognosis. Chronic

convulsions, which persist more than a few minutes, point to serious disease of the central nervous system, and in such cases, although life may be preserved, permanent injury, such as idiocy, paralysis, hydrocephalus, etc., is liable to be left behind.

Treatment must, of course, always be directed to the removal of the cause, when this can be found, but often immediate relief must be afforded before the exact etiology can be discovered.

(20)

℞. Potass. bromid., ... 4
Chloral. hydrat., ... 1
Aquæ puræ, ... 60. M.
Teaspoonful every twenty minutes for child one year old.

By the mouth, or in double doses by the rectum, until the convulsions are quieted. If we suspect intestinal obstruction, the bromide may be preceded by full dose of calomel (gr. ij–iv) placed on the tongue.

If the exciting cause is still in the stomach, a prompt emetic of gr. j turpeth mineral may give most satisfactory results. Where the temperature is heightened, nothing will give better results than sufficient antipyrine to bring it to normal, conjoined with warm bath and cutaneous derivatives—mustard to feet, calves, etc., which are especially helpful in cerebral congestion. The child should be completely undressed, both for the purpose of properly examining it and for ease in giving a bath if necessary, which should never, in the excitement of the occasion, be made hotter than the mother or nurse can put her tongue into with safety.

3. EPILEPSY.

Definition.—Morbus sacer, the falling sickness, etc., differs in childhood only in a few minor points from epilepsy as seen in the adult. Chief among these may be mentioned the fact that with children the aura is usually absent or not recognized by them, and epileptic attacks recur more frequently with the child. The paroxysms are, as a rule, lighter, and falling may not occur, the vertigo epilepticus taking its place. This constitutes the minor form whose attacks do not last over a minute. But there is also a grave form in which the child falls with a sudden outcry, perhaps

inflicting serious injury upon itself, and showing all the symptoms of a typical case of epilepsy in an adult.

Etiology.—Same as for adult.

Prognosis.—Fairly hopeful. Puberty, onanism, and the use of alcohol makes the attacks more frequent. The milder forms of epilepsy have no effect upon the mind, but the grave forms produce mental hebetude, and at last imbecility.

Differentiation.—Eclampsia can only be distinguished from epilepsy by the frequency of the attacks in the latter. Simulated attacks may be known by their absence of cyanosis during the attack and the lack of subsequent pallor of the skin.

Prophylaxis.—Marriage should not be permitted among epileptics, and epileptic mothers should employ a healthy wet-nurse (K.). Over-exertion, especially mental, should be carefully avoided, as well as fright, pain, and the reading of exciting and pernicious literature.

Treatment must first of all aim to remove exciting causes. If tumors, or cicatrices press upon or irritate nerves, such tumors are to be extirpated. Worms must be expelled and onanism prevented. Derivatives of cantharidal collodion, mustard, or pustulating ointments are useful in cerebral troubles, while trephining may be necessary where the bones of the skull are depressed. Where these things are impossible, or have proved of no avail strict attention must be paid to the diet and the preservation of the general health of the patient. The food must be moderately rich, and spirits are to be avoided. Frequent exercise in the open air, daily movement of the bowels, repeated baths and sweatings, with journeys to warmer climates, are all of value. Education should be preferably at home rather than at school. Medicinally this recipe is useful:—

(21)

℞. Pot. bromidi., ... ℥vj
Sodii bromidi., ... ℥ij
Tinct. cinch. comp., ... ℥j
Simple elixir, ... ℥iij.

SIG.—Teaspoonful four times a day. H.

If these relatively large doses of the bromides produce acne,

this may be remedied by adding small doses of Fowler's solution three or four times a day.

It should also be remembered that, in many children, the continued use of the bromide produces constipation and sluggish action of the kidneys which may require attention, especially in the way of diet. A large amount of meat should be forbidden, as well as excitement of all kind, and ample sleep and good air provided.

4. SPASMUS NUTANS.

Etiology.—A rare affection of early infancy, usually as early as the sixth or eighth month, following either trauma, exhausting disease or eclampsia. Milder attacks are supposed to be reflex; severe ones are thought to result from pathological changes in the brain itself, whose exact nature are as yet unknown.

Symptoms.—This affection is essentially a spasmodic nodding of the head, continuous or intermittent, often preceded by twitching of the facial muscles nystagmus, or cramping of the muscles of the arms.

Prognosis.—Spontaneous cures are possible in the course of a few months. These are those cases which are produced by transient reflex irritation. The prognosis, in those of central origin, is unfavorable, for such often terminate in idiocy or epilepsy.

Treatment.—Removal of cause, when this can be discovered.

5. CHOREA MINOR.

Synonyms.—St. Vitus' Dance, Veitstanz.

Definition.—Involuntary movements of more of less of the striated muscular fibres, increased by attempts at coördination and ceasing during sleep or unconsciousness.

Etiology.—More frequently seen in girls than boys, but generally of shorter duration than with males. Owing to the general nervous instability of the child, chorea is one of the most frequent nervous affections of childhood, especially in neurotic families, or where education has been unduly pushed, or such children have been severely frightened. The relations of rheumatism and eye-

strain (Stevens) have not been proven, although they are frequently associated and undoubtedly may act as exciting causes.

Symptoms.—The movements of the muscles are not at first very clearly marked, but later restlessness shows itself during the whole day, either in all the muscles of the body, or the muscles of the head and face may be exempt, and the extremities attacked —either alike, or on one side, or crisscross, *i. e.*, the right arm and the left leg, or vice versa. Sometimes the restlessness is greater on one side than the other; but the muscles are never for an instant perfectly still, except in quiet sleep. Even vivid dreams produce choreic movements. The arms shake and are jerked out of place; the fingers are sometimes flexed, sometimes extended and pick aimlessly at the clothing. When such actions are noticed, the child becomes more and more awkward and its movements less under control. The feet totter and jerk irregularly, the gait is uncertain and stumbling, until, in the severer forms of the disease, walking becomes impossible. Where the head and trunk are implicated, they are moved to and fro in all sorts of shakings, bowings and jerkings. The child may vary this by "making faces," running out its tongue, etc. Speech is always difficult and generally stammering. Deglutition, from the implication of its muscles, exceedingly precarious, so much so that pills ought never to be given in these cases. An attempt at mastication often results in biting the cheek or tongue and involuntary gnashing of the teeth follows swallowing food. The choreic movements are increased by attempts to prevent them, so tht such children become at times entirely unable to write, eat or walk so long as they are watched, especially if they expect to be reproved for their clumsiness. In very prolonged cases the memory may become weakened.

Pathological Anatomy.—None pathognomonic of the disease. The most frequent lesion found is the occurrence of endocardial vegetations about the valves of the heart. (Goodhart.)

Progress and Prognosis.—Chorea may be cut short by intercurrent disease, but it usually culminates in from three to six weeks, then remains in statu-quo from five to seven weeks, and from this point begins to improve, though liable to frequent relapses, but ultimate recovery almost invariably ensues (six months average.) Epi-

lepsy, idiocy, death following coma, and chronic chorea are, however, possible sequelæ.

Treatment, must be directed to the general condition, especially if there is anæmia or chlorosis, which require iron, good food and air. Worms must be expelled by means of cathartics and anthelmintics; improper residence, if possible, is to be changed, and onanism and rheumatic diseases of the heart should be carefully looked after. Chloroform inhalations may be (rarely) employed in violent paroxysms, and when the violence of the convulsions prevents sleeping, we should endeavor at night to make position as comfortable as possible by well fitting and padded braces. Great care should be given to the mental condition of the child, who should not be allowed to be either frightened or threatened, on any account, nor should it be sent to a public school. Rewards and encouragement should be freely resorted to, and massage is a valuable adjuvant to any method of treatment. Goodhart advises forced feeding, and when the child can be put into a suitable hospital the annexed diet table will be found of great value.

DIET TABLE.

5.30 A. M. Oss warm milk.
7.00 Oss milk and ℥iij bread and butter.
9.45 ℥ss Malt Extract.
10.00 Massage for fifteen minutes, followed by Oss warm milk.
12.30 P. M. Rice pudding, milk, potatoes and vegetables.
4.45 Oss warm milk, ℥iij bread and butter and soft egg.
7.00 ℥ss Malt Extract, followed in half hour by Oss milk.

At the end of ten days the bread and butter are to be increased to four slices at the 7 and 4 o'clock meals, and a chop or steak added at the noon. Of drugs, Calabar bean (0.05 gm. powder t. i. d.) and arsenic have the best reputation for the relief of chorea. Arsenic is best given to children as Fowler's solution, increasing the dose one minim daily until symptoms of arsenical poisoning appear, when the dose should be diminished one-half, or discontinued for one week, and then recommenced at the minimum dose. Antipyrine, when not otherwise contraindicated, has a decidedly beneficial effect in lessening the violence of chorea, and can be used with advantage also in what are usually known as

choreiform conditions, such as stammering, blinking, working the mouth, etc., etc., all of which are the mildest manifestations of the same disease.

6. CHOREA MAJOR.

Synonym.—German Saint Vitus' Dance.

Definition and Differentiation.—Usually distinguished from ordinary chorea by the rarity of the major variety and by its disturbance of consciousness and abolition of reflex movement.

Etiology.—It is especially apt to attack girls about the time of puberty, and generally appears upon retarded or irregular menstruation. Much more rarely boys are attacked about puberty; and it is well authenticated that the disease is hereditary, but generally a predisposition to this condition arises from improper education by a hysterical mother. The previous conditions of the brain are unknown, except that there is heightened irritability of the sensorium and the motor nervous system.

Symptoms.—After a prodromal period, which varies and is marked by dreams, restless sleep, anxiety, timidity, pains in the head and back, and disturbances of digestion, the paroxysms break out with varying frequency, duration—a few minutes to several hours—and intensity. The attacks consist of the most complicated and apparently voluntary movements—dancing, jumping, and climbing. At the same time, or instead of these irrational motions, the patient chatters the most nonsensical stuff until the paroxysm passes by, when the girl falls into a long deep sleep, from which she awakens without a remembrance of what she has been doing or saying.

Progress and Prognosis.—Sometimes the disease is limited to a single attack, or there may be a succession of them upon a single day. Or they may occur at intervals of several weeks, or even further apart. The prospect for life is always favorable, though not for intellectual vigor, for such girls are very apt to become mentally unstable women.

Treatment should be directed first of all to the regulation of menstruation, for when this is accomplished it usually brings a cure with it. This generally requires an improvement of the general condition of the child, any relapse from which is liable to

bring on again the paroxysms. Improper reading and company must be carefully looked after, and especially care should be taken that no one relates to the child what it may have said or done during the attack. Iron, quinine and manganese are helpful against the chlorosis and anæmia, cathartics for constipation, with mustard foot baths, or mustard plasters to the thighs, and salt sitz baths for suppressed menses. During the attacks care should be taken to prevent injuries to the body. Often we can bring the patients back to consciousness by sudden cold effusions, or a sharp reproof.

7. ARTHROGRYPOSES.

Definition.—Tonic cramp of localized groups of muscles.

Etiology.—Most frequently in weakly children from one to three years of age, and by preference among boys and during the cold season of the year, or in convalescence. The disease is either symptomatic of various cerebral lesions, *e. g.*, caseous degeneration, apoplexy, etc., or is idiopathic with unknown causes; in the latter case it is without fever.

Symptoms.—Individual groups of muscles, especially of the extremities, are persistently contracted. Sometimes there are œdema and erythema of the limbs in addition. By examination, it seems as if pain only arose from the action of the opposing muscles. Generally both sides of the body are simultaneously affected, *e. g.*, both arms are flexed to a right angle at the elbow, hand and metacarpal joints, and hence the thumb is emballed in the hand. Or the feet may be extended, with contraction of the muscles of the calves, while the toes are either extended or bent. Alteration in the disposition often attends these cases, the child being depressed and sad without reason.

Progress and Prognosis.—The disease is usually of protracted duration and with frequent relapses, and prognosis is favorable only in the idiopathic variety.

Treatment.—The main thing is to maintain the strength by means of good diet, iron, quinine, etc. The cramp of the muscles may be combated by means of baths, warmth, the internal use of opiates or hydrates of chloral, and external narcotic rubbings.

8. NEUROPATHIC FACIAL ATROPHY.

Etiology depends upon a deficient development of one-half of the face. Its peripheral causes are burns, scrofulosis of the cervical glands, abscess of the tonsils, etc., while the central ones are apoplexies, etc. Girls are more frequently attacked than boys, and in the majority of cases the left half of the face is the part affected.

Symptoms and Course.—Either half or the whole of the face may become affected by the extension of the atrophy. The parts are pale, the bones remain small, and the muscles of these patches less developed than normal. One-half of the tongue is apt to be atrophied, and one eye smaller than the other. The hair falls out or turns gray upon the affected side, which appears considerably older than the other. No changes in the arteries.

Prognosis.—Bad.

Treatment by electricity up to the present time has been without results.

9. MOTOR PARALYSES, CENTRAL AND PERIPHERAL.

The traumatic and rheumatic paralyses of children differ in no respect from those of adults. We have already made mention of diphtheritic and symptomatic-central-paralyses, which are found in connection with lesions of the brain, spinal cord and bones, but there are yet four forms of paralysis which especially deserve our attention.

(A) Essential Paralysis.

Synonym.—Anterior poliomyelitis.

Etiology.—The period of dentition, especially during the cutting of the molars, seems to act as a predisposing cause. Most frequently exposure to cold is the exciting cause, although essential paralysis sometimes follows typhoid fever and the exanthemata, and at others the only thing abnormal noted has been persistent constipation or passive congestion of the brain.

Pathological Anatomy.—Atrophy of the trophic centers in the anterior columns of the cord.

Symptoms.—Partial or entire loss of motion and sensibility in one or both of the upper, more often of both the lower extremities. The paralytic attacks may come on suddenly over night, or be preceded by fever, difficult dentition, or by eclampsia, and sometimes the paralyzed part is the seat of sharp pain for several days. The paralyzed arm hangs helplessly down and cannot be raised, but sometimes, when only the muscles of the upper arm are paralyzed, the motility of the fingers is preserved. It is also rare that all the muscles of the paralyzed feet are affected. The sphincters of the bladder and rectum are intact, even when the child drags both feet in walking.

Progress.—Sometimes the paralysis disappears entirely or partially after two or three days, or in as many weeks, without leaving any sequelæ behind, or it may persist for months. In the latter case it leads to atrophy of the inactive muscles, which is especially noticeable as partial paralysis of the shoulder, atrophy of the deltoid or lower leg, with contractions, such as club-foot, genu valgum, etc. With these are associated a weak pulse, a lowered temperature of the skin, and sometimes œdema of the affected members, and, lastly, imperfect development of the paralyzed member.

Prognosis is favorable for life, but not always so for recovery.

Treatment.—Symptomatic. None of the remedies usually employed can shorten the course of the disease. During the first week the affected limb should be kept warm, and stimulating embrocations should be tried. After the paralysis has persisted for a month, we should endeavor to overcome the muscular atrophy by means of electricity, daily applied. Of drugs, the only ones of real value are the iodides, and strychnia in some form or other, long continued. Ergot is thought to be useful, if the case is bad at the onset.

(B) Paralysis Myosclerosica, Atrophia Musculorum Lipomatosa.

Definition.—A thickening of some and atrophy of other muscles, but the distinguishing feature is a sub-paralysis of them all.

Etiology.—Bad nourishment and dwellings, rachitis, scrofulosis, or other general diseases. It nearly always attacks boys.

Symptoms.—If the disease begins early in life, children do

not learn to walk until late, and walking is difficult. If the children already run about, they become easily tired, and have pains in their legs, which increase in size, their gait becomes uncertain, and is only possible on the toes. Rising becomes difficult, and can be accomplished only by strenuous exertions. The thoracic muscles are atrophic, while the muscles of the calves of the upper and lower thigh, and of the upper arm, are either all or partially hypertrophied. In the latter condition atrophic spots and knotty projections alternate with each other in the same muscle. At the same time the normal curvatures of the spine are exaggerated, producing lordosis and kyphosis. The electric contractility of both the atrophic and hypertrophic muscles is diminished, while, curiously, taste alone is apparently heightened. The disease usually pursues a steady course for the worse for several years, though rarely a halt is observed. As atrophy of the thoracic muscles advances, dyspnœa increases until suffocation may appear.

Prognosis.—Bad.

Treatment of any value yet unknown.

(c) Paralysis Nervi Facialis.

The same form of disease that occurs from pressure of the forceps (see page 42) can also be brought on later in life by caries of the petrous portion of the temporal bone, induration of glands, or scars in the neighborhood of the facial, or from central diseases.

Symptoms.—At first the paralysis is recognizable only during laughing, crying or speaking, because then the muscles of one side of the face remain quiet; later, the paralyzed half of the face becomes expressionless, even when in rest. The affected corner of the mouth hangs down, and the tears flow over the cheeks, and in central paralysis the uvula hangs awry.

Progress and Prognosis vary according to the cause of the disease. After petrosal caries, persistent paralysis almost always is left behind.

Treatment.—Cicatrices and infiltrated glands must be removed. Caries of the temporal bone requires the assistance of the aurist.

(d) Paralysis of the Serratus.

Etiology.—The paralysis may be peripheral, and result from various traumatic causes or colds acting upon the course of the

nervus thoracicus longus, to which alone the serratus anticus major owes its innervation. When the causes are peripheral, the paralysis is unilateral, and more often over the right side, but when the causes are central, the paralysis is bilateral, and is often combined with atrophy and paralyses of other muscles. Both boys and girls are affected.

Symptoms.—After transient pains in the supra-clavicular region, the arm can only be raised to a horizontal position, and at the same time it is observed that the shoulder blade has so twisted itself that its inner edge projects from the thorax, like a wing, with curvature of the spinal column; but if the shoulder blade is held fixed in its proper position; the arm can be raised and the spinal column straightened. Later, the muscle becomes greatly atrophied.

Prognosis.—Seldom favorable.

Treatment.—Stimulating liniments or cupping to the supra-clavicular region, with massage and the battery, is about all that can be done for such cases.

(E) The Organs of Special Sense.

(*a*) Smell.

The sense of smell is sometimes wanting from a congenital absence of the olfactory bulb, but more often it arises from a chronic catarrh acquired early in life.

(*b*) Hearing.

1. **Congenital deafness,** often combined with absence of speech—deaf and dumbness—proceeds either from malformations of the inner ear, or from central disturbances. The intellectual functions of the deaf and dumb are often preserved intact, and by instruction in the appropriate institutions, become brilliantly cultivated.

2. **Malformations of the Ear.**—There may be complete or partial absence of the pinna of the ear—*defectus auriculæ*—which can only be assisted by wearing an artificial ear; but this only slightly interferes with hearing. Furthermore, the ears may lie flat on the cranium—*auriculæ adpressæ*—or stand directly out like the

ears of a bat—*auriculæ vespertilionis*. These require to be bound down with bands of adhesive plaster for several weeks. Finally, there may be closure of the ear—*atresia seu imperforatio meatus auditoriis*—generally only on one side. This closure may be either membranous or osseous, the latter of which occurs only with other malformations—hemicephalia, etc. The membranous closure can be safely removed by an operation; but in the treatment after the removal of the obstructing membrane, it is most important that the canal should not be allowed to close itself again. As regards the treatment of the auditory organs, we must refer the reader to the special works on the subject.

(*c*) Sight.

1. **Malformations of the Eyelids** and surroundings. Coloboma of the cartilage of the upper lid, without fissure of the skin, is of no significance. *Epicanthus* is a semilunar fold of skin in both of the inner angles (canthi) of the eyes, whereby the root of the nose is generally greatly flattened, and the integument covering the same encroaches upon the strongly tense folds, and may even reach the inner border of the cornea, but does not interfere with sight. Epicanthus sometimes disappears by a spontaneous cessation of its growth; when it persists for a long time, it can only be cured by cutting out of a fold of skin from the base of the nose, and closing the edges of the wound with fine sutures.

2. **Malformations of the Inner Eye.**—(*a*) *Coloboma iridis*, seu iridoschisma, is a fissure of the iris from below or sideways in different directions. Sometimes the pupil preserves its normal shape, and the fissure is separated from the pupil by cross-bars of iris tissue in the pupil. Coloboma iridis is rare and is more often double than single. The cause of coloboma, both of the cartilage of the upper lid and of the iris, is unknown; sometimes it is hereditary. The action of the fissured iris is very imperfect.

(*b*) *Irideremia*, partial or entire absence of the iris, is always double. Here, as in very marked coloboma, we can always see the fundus of the eye when it is illuminated by the proper light. These unfortunate children are always short-sighted, and are compelled to blink through the lids. Later, inflammation, and haziness of the lens, is very frequent, whence nystagmus arises.

Treatment.—Protection from the light by means of blue glasses and an artificial diaphragm.

3. **Atresia Pupillæ Congenita.**—The pupillary membrane, which should atrophy at the seventh month of pregnancy, persists either as an entire and transparent membrane, with few or no vessels, or it may be perforated or ragged. It weakens the power of sight and impedes the action of the iris. Through the traction of the iris sometimes a sort of spontaneous cure occurs, the membrane being ruptured and the fragments atrophy.

Treatment.—Dropping in of a solution of atropine.

4. **Cataract**—centralis seu neuclearis—is a sharply defined, white, round opacity in the centre of the lens, often complicated with some of the previous malformations. The lens is never entirely opaque, and the ability to see is greatly interfered with, but never entirely lost. Requires an operation.

SECTION IX.

DISEASES OF THE DIGESTIVE APPARATUS.

1. MALFORMATIONS OF MOUTH AND TONGUE.

(A) Harelip.

Synonyms.—Labium leporinum; wolfsrachen; bec de lièvre.

Definition.—Is an arrest of development of the embryonic inter-maxillary and superior maxillary bones, whereby they fail to unite.

Varieties.—Harelip may occur on one or both sides, either single or double, and also implicate the soft palate. In the worst cases the fissure extends from the outer third of one lip into the corresponding nostril, while in the mildest cases the lip is cleft only one-third to one-half of its width.

Fissures of Hard Palate.—The fissures of hard palate—palatum fissum—are generally only unilateral, and are often so broad as to allow one readily to look into the cavity of the nose.

Double uvula, or simple fissure of the uvula without fissure of the palate, or harelip, is to be regarded as an arrest of development in its simplest form, while the most marked disfigurement of the face may result from fissure of the palate complicated with double harelip. In such cases the intermaxillary bone has not united on either side with the maxillary bones and projects forward like an isolated knob or snout The nostrils are widely and irregularly dilated and the central part of the upper lip is almost entirely wanting.

Consequences are in proportion to the degree of the deformity. In the milder cases nursing is not difficult, but in severe ones the children are unable to seize upon the nipple with their lips, but they quickly learn how to suck if the nipple is placed in the fissure. When the palate is cleft, nursing is always considerably more difficult, and especially so when the milk runs out of the nostrils, though this may be lessened by holding the head high. Later in life speech always becomes indistinct; in harelip the labials, and in fissured palate the palatals cannot be enunciated. If harelip is not operated upon, a part of the teeth always grow in a faulty direction, but if harelip is successfully operated upon, it lessens the cleft of the palate.

Occurrence.—The most frequent of all the deformities of childhood.

Treatment.—If the cleft lip renders nursing difficult, the fissure should be operated upon during the first days of life, and on no account ought we to wait until the child has become enfeebled. On the other hand, when sucking is not difficult and the child is thriving, we may defer the operation until the fifth month. The operation should be performed on the child after it has been awake for a few hours and has previously taken a good quantity of nourishment. (For the particulars of this operation we refer the student to works on surgery, as we do also the operation for staphylorrhaphy for cleft palate, which, however, ought not to be performed before the tenth year.

(B) MICROSTOMA.

Definition.—A lessening of the size of the mouth, to complete imperforation of the lips.

Etiology.—Congenital, or arising from burns or syphilitic ulcers, etc.

Occurrence.—Very rarely seen except as result of an accident.

Treatment.—If there is complete imperforation, or if the mouth is so small that the child is unable to seize hold upon the nipple, the operation of stomatopoesis must be immediately performed.

(C) MACROSTOMA.

Synonym.—Congenital fissure of the angle of the mouth.

Treatment.—On the same principles as harelip.

Congenital fissure of the lower lip, according to Ashhurst, is also occasionally met with and requires the same kind of treatment.

(D) HYPERTROPHY OF THE LIPS.

Etiology.—May depend upon the existence of the scrofulous diathesis, or from the irritation produced by fissures or ulcers, and in some rare cases hypertrophy exists without any apparent cause.

Operation consists in making two transverse incisions so as to remove a sufficient slip from the thickness of the part and then approximating the edges with delicate sutures.

Congenital tumors, cystic, erectile, etc., of the lips are occasionally met with and should be treated as such tumors are when found elsewhere upon the body.

(E) ANCHYLOGLOTTIS ET ELONGATIO FRENULI.

Synonym.—"Tongue-tied."

Definition.—The frenum of the tongue is found as a membrane extending to the tip of the tongue. This may appear either as a thin or thickened membrane, which if too short ties down the tongue.

Symptoms.—This occasionally renders nursing difficult and the protrusion of the tongue beyond the lips impossible. Possibly it may later render speech indistinct and is popularly believed to make children dumb.

Treatment.—An operation is indicated only when nursing is difficult, but it is often performed for the peace of mind of those parents who are frightened over their "tongue-tied" children. May be easily performed as follows: Lift up the tongue with an index finger, thus making the frenum tense. Draw down the lower

lip and snip with a pair of round-pointed scissors the offending frenum, but refuse to operate when the tongue can be made to pass the vermilion of the lips.

(F) Atrophia Linguæ.

Occurrence.—Atrophy affecting only one side of the tongue has been observed.

Etiology.—In Ashhurst's case was due to necrosis of the occipital, and recovered upon extraction of the sequestra.

(G) Tumors of the Tongue.

Congenital nævi and aneurisms by anastomosis, are very rarely met with on the tongue and require to be treated as when found elsewhere.

(H) Fissura Seu Defectus Linguæ.

Etiology.—When the two halves of the visceral layers fail to coalesce, or unite too late, the tongue remains cleft with a longitudinal fissure sometimes confined to its tip.

(I) True Defectus Linguæ.

Definition.—Occurs when there is a failure to develop the tongue and it appears only as two wart-like bodies lying on the floor of the mouth.

Treatment.—None possible.

(J) Adhæsio Linguæ,

Is a growing together of the tongue and the roof of the mouth, observed very rarely as a congenital deformity. It may also be acquired from syphilis. The separation of the tip is best performed by means of the galvano-cautery.

(K) Hypertrophy and Prolapse of Tongue.

Etiology.—Any part of the tongue may be hypertrophied, so that after birth instead of lying, as usual, close to the hard palate, the tongue protrudes between the lips. It is swollen, with enlarged papillæ, and becomes purplish or brown and dry from exposure to the air. As the hypertrophy increases, not only in length but also in breadth and thickness, the prolapse also increases and

nursing becomes difficult. The incisors project horizontally forward and excoriate the tongue, and by their irritation still further augment its hypertrophy. The saliva constantly dribbles out of the mouth, decomposes and produces a disgusting odor. Articulation is always very difficult. Such hypertrophy is especially apt to be found in cretins, but it can also be acquired after convulsions, etc.

Treatment.—The projecting portion of the tongue should be removed by the galvano-cautery, or a wedge-shaped piece may be cut from the tongue.

2. RANULA.

Definition.—A semi-transparent, fluctuating, encysted tumor beneath the tongue.

Varieties.—(*a*) *True ranula*, found in the floor of the mouth, from the size of a walnut to a pigeon egg, and containing glairy, tenacious contents.

(*b*) *Mylohyoid*, found between the mylohyoid and buccal mucous membrane, often as large as an orange, and filled with cheesy contents.

Etiology.—The common form of ranula has thin walls, and contains a fluid somewhat resembling saliva, whence it was formerly supposed to be a dilatation of the duct of the submaxillary gland. May be so, in those instances where the duct is occluded by a salivary calculus, but the majority of ranulæ appear to be distinct cysts. (Ashhurst.)

Symptoms.—If the ranula has attained some size before it is noticed, it may be large enough to crowd the tongue against the hard palate, so that nursing and swallowing are interfered with, and sometimes even breathing also becomes difficult, especially if there is concomitant coryza, or there may be convulsive attacks of dyspnœa, simulating croup.

Prognosis.—Favorable, though disease is prone to recur; rarely spontaneous cures have been known to follow suppuration.

Treatment.—If complicated with croupy attacks, operate immediately, as follows—

Open sack sufficiently to thoroughly cauterize its inner walls, and this must be repeated often enough to prevent union, except from the bottom of the sack. If this is not observed, relapses will occur.

3. STOMATITIS CATARRHALIS.

Definition.—Simple hyperæmia with increased secretion by the mucous membrane of the mouth.

Etiology.—Too hot, or otherwise irritating food or drink, dentition, or secondary after the use of mercury, arsenic, etc., or as a sequela of measles, scarlatina, typhoid, or acid dyspepsia with gastric catarrh.

Symptoms.—At first unnatural heat, redness and dryness, and then profuse flow of saliva, which soon becomes acid, and excoriates. Slight fever, considerable restlessness and pain, and consequent unwillingness to eat.

Prognosis.—Always favorable on the removal of the cause.

Treatment.—Addition of lime-water to milk, and feeding with a spoon, if necessary, on account of pain in nursing. The bowels should be kept free ($\frac{1}{20}$ gr. calomel), and the mouth thoroughly washed, hourly, with a solution of borax or potass. chlorat. (gr. x. to f ʒ j rose water), preferable on a bit of absorbent cotton twisted around the end of a probe. If gastric catarrh complicates, this is to be treated according to the methods hereafter to be detailed.

Complications.—Other and more serious forms of stomatitis, especially thrush, or

4. STOMATOMYCOSIS.

Synonyms.—Thrush; sprue; soor; muguet; millet; schammchen; mehlmund.

Definition.—A specific, yellowish-white parasitic growth upon the mucous membrane of the mouth, which has been previously irritated by acid secretions or ingesta. Exceedingly frequent.

Pathological Anatomy shows no destruction of the mucous membrane, which is merely inflamed and serves as a nidus for the growth of the fungus, oïdium albicans.

Etiology.—During the first weeks of infancy the buccal secretions are acid, and hence this disease is very common among young infants. Also especially apt to occur from sour food. A spoiled "sugar tit," an unclean rubber nipple, a dirty nursing bottle, or sour milk (oïdium lactis), lead to the development of the thrush fungi upon the mucous membrane, whence, possibly, it

may be transferred to other persons. Thrush is very prevalent in foundling asylums and among bottle-fed babies, where it is almost invariably associated with impaired nutrition as well. More rarely met with in the last stages of wasting diseases, as phthisis, tuberculosis and glandular degeneration of adults as well.

Symptoms.—First a severe catarrh of the mucous membrane of the mouth and tongue, with a great hyperæmia and tenderness of the parts, extending over the whole mucous membrane except that of the hard palate. The buccal secretion becomes viscid and has an acid reaction. After these conditions have lasted a varying length of time numerous white specks are found upon the reddened mucous membrane. These enlarge rapidly and may coat the whole cavity of the mouth with a thin, white membrane. At first these white specks can be separated from the underlying membrane only with difficulty, but after a few days they become loose and can easily be removed, and show under the microscope that they consist in part of epithelial cells and in part of a growth consisting of roots, branches and sporules. This fungus may spread from the cavity of the mouth into the pharynx, œsophagus, or produce hoarseness by extending into the larynx wherever cylindrical and ciliated epithelium are absent. Thrush may be communicated to any raw surface which is not kept scrupulously clean, and hence we may find it about the anus, though rarely so, of a child suffering from intertrigo. Infants having the thrush cannot nurse well, but often let go of the breast or refuse to take the bottle, and pass into a drowsy, marasmic state.

Prognosis.—If the children are strong and the cause is removed, thrush lasts about eight days. Its most frequent complication is intestinal catarrh, arising from the soured ingesta. As a rule, when there has been a persistent diarrhœa we fear a fatal result. Though the prognosis in general is good, when there is complicating diarrhœa, or when the thrush is of long duration, the result is always doubtful; in the latter case because the oïdium may extend into the blood-vessels and send an embolus to the brain—thrush-emboli. The prognosis for thrush in the œsophagus is always bad. In phthisis, etc., always bad. Statistics vastly differ, but in private practice it need not be dreaded; often fearfully fatal in orphan asylums.

Treatment.—(1) Change the acid reactions of the buccal secretions to alkali, by means of borax or bicarbonate of soda solution 1–20, pencilled every half hour over the whole mucous membrane of the mouth. (2) Avoid the use of all substances which favor the growth of fungi, as sugar or saccharine fluids, honey or syrup, etc., sugar tits or milk. Unsweetened bouillon or oatmeal gruel with egg are the best foods until the fungus has disappeared. (3) If the thrush extends into the œsophagus and produces vomiting, paint the inside of the mouth with a solution of sulphurous acid in glycerine. Jenne prefers sulphite soda (ʒj–ℨj). Pay most careful attention to nutrition, employing a wet-nurse if necessary.

(22)

℞. Pulv. borax, ... ʒss
Glycerinæ, ... ʒj
Aquæ cin., ... ℨij.

In bad cases may use nitrate of silver solution (gr. ij–ℨj t. i. d.), or better, swabbing with peroxide of hydrogen.

Prophylaxis.—Sugar-teats are always to be prohibited, and if the child has become accustomed to their use we must substitute in their place a rubber nipple, which should be cleansed frequently and thoroughly. The nipples of the nursing bottles and the bottles themselves, must always be cleaned with the greatest care lest any milk should be left adherent and turn sour. Rubber nipples must be turned inside out and cleaned daily, with a brush. The bottles must also be cleaned daily with a brush and sand, and when not in use they ought to be kept filled with water to which a little bicarbonate of soda has been added. The rubber nipples ought also to be kept in the same solution, and the mouth of the child and the nipples of the wet-nurse should also be carefully cleansed with ℞ No. 22, or warm water, after every feeding, with a bit of soft rag or absorbent cotton twisted about the finger of the nurse.

5. APHTHOUS SORE MOUTH.

Synonyms.—Aphthæ; stomatitis vesiculosa.

Definition.—*ἀφθαι*, as used by Hippocrates, clearly denoted a breach of substance.

Symptoms.—After a few days of simple catarrhal stomatitis (see page 146) subepithelial exudates occur in the form of small vesicles which soon leave a shallow, painful ulcer behind. These are without odor, have a yellowish base and excavated edges, as if cut out from the mucous membrane of the mouth with a circular or ovoid punch, and heal within four to six days from their first appearance.

Prognosis.—Good, if the exciting cause is removed.

Treatment.—Sugar teats and injurious medicines must be discontinued. The roots of decayed teeth must always be removed. Liquids, and these cool, must alone be given. If during dentition nourishment is refused by the infant for several days, in such cases a few nourishing enemata must be given. Solutions of bicarbonate of soda or borax (1–20 of water) should be pencilled over the mouth every half hour, to neutralize its acid secretions. Keep the mouth scrupulously clean, and use potass. chlorate freely, as Henoch regards it a specific in this disease, and it is very nearly so. Small dose of calomel night and morning is also helpful.

6. STOMATITIS ULCEROSA.

Synonyms.—Ulcerative stomatitis; mundfaule.

Definition.—Ulceration of the gums, found only in children who have cut some of their teeth.

Etiology.—Transmission is possible, but can only take place from direct contact, or by means of children's toys, spoons, etc. Non-contagious sporadic cases may also occur from carious teeth, calomel (stomatitis mercurialis), improper food, bad air, and during convalescence from serious diseases, especially measles.

Symptoms.—After a transient erythema of the mucous membrane of the mouth and gums, ulcers form on the latter about the teeth, accompanied sometimes with high fever. The floor of these ulcers is covered with a yellow coating and bleeds at the slightest touch. The secretion of saliva is increased while an intolerable odor, like that from rotting flesh, always accompanies this variety of stomatitis. Then the whole of the buccal mucous membrane becomes swollen, and marks of the teeth appear upon the mucous membrane of the tongue and cheeks. Later, upon

the lips appear the same painful ulcers, with sharply-defined, jagged edges and little inclination to heal. The lymphatic glands of the neck are always somewhat swollen. The mouth cannot be closed but allows the copious, fetid, sero-sanguineous saliva to trickle over the chin and erode it.

Prognosis.—If the cause persists, the stomatitis may last for months; the teeth dropping out, the child becoming despondent and atrophic; since mastication and deglutition are extremely painful and difficult, thirst alone at last compels the child to drink, and then it takes a great deal at once. Recovery, however, generally takes place ultimately.

Treatment.—First of all, good air and nourishment must always be provided, with the most scrupulous cleanliness, by means of rinsing out the mouth with antiseptic solutions, and the removal of necrosed tissues by cutting or scraping. Older children may use a gargle, but whatever method is adopted, cleansing must be frequent and complete. Painting the ulcers with a solution of permanganate of potash or peroxide of hydrogen is also of value, as is also fluid extract of golden seal and glycerinæ. Internally, Starr speaks highly of potass. chlorate, in the following mixture. Stimulants are of great value also:—

(23)

℞. Pot. chlorat., ... gr. xlviij
Acid. muriat., dil., ... ʒj
Syrupi, ... ʒss
Aquæ, ... q. s. ad. fʒiij M.

Sig.—ʒj diluted for child of 3 years.—Starr

7. GANGRÆNA ORIS.

Synonyms.—Noma; wangenbrand; oral gangrene.

Etiology.—Nearly always occurs in children above two years of age, and generally after some severe constitutional disease, as typhoid, scarlatina, measles, dysentery, etc., or in children who have become greatly reduced, especially when living in foul air. It generally attacks but one cheek and is more frequently observed in girls than boys. Noma of the genitals, under similar circum-

stances, occurs much more rarely, also gangrene of the anus, vulva or external meatus. This perhaps occasionally follows the administration of mercury, and one attack, *if survived*, predisposes to another (Gerhardt).

Symptoms.—During apparent convalescence, or in atrophic children, without any clearly marked premonitory symptoms, a circumscribed induration of a portion of the cheek is noticed. This takes place painlessly and is generally found in the neighborhood of one of the angles of the mouth; on the underlying mucous membrane appears first an ichorous vesicle, which very soon becomes a gangrenous ulcer, of a dark reddish-brown hue. Great œdema of the affected cheek and side of the neck immediately sets in, with infiltration of the lymphatic glands. The skin of the cheek, which has previously been pale, now becomes bluish over the primary induration, and the epidermis blisters and peels off. As a rule no line of demarcation is established, but the gangrene spreads rapidly, both outwards and inwards, sometimes extending to the eyelids or neck. The gum and superior maxilla necrose with surprising rapidity, the teeth fall out, and there is a sanious discharge with horrible fetor.

Course.—The entire process generally reaches its acme in four to seven days; then pyæmia ensues, from absorption of infectious matters. Sopor and delirium follow, and usually death takes place within two weeks, with the symptoms of hydræmia. Very rarely has recovery been known to take place, then only with great deformity, on account of the destruction of tissue or secondary affections of the respiratory organs, *e. g.*, pneumonias or gangrene of the lungs.

Prognosis.—Very bad. Ninety to ninety-five per cent. die.

Treatment.—(1) Strengthen the constitution by means of wine, coffee, milk, meat, eggs, quinine and good, pure air. (2) If possible, prevent the spreading of the gangrene by means of efficient cauterization of its boundaries with caustic potash, or fuming nitric acid two to three times a day. (3) Lessen the fetor by thorough application of a solution of permanganate of potash, iodoform and bismuth, carbolic acid or peroxide of hydrogen. Older children can also use gargles of the same, and daily baths and change of clothing should be insisted upon.

8. SIMPLE AMYGDALITIS SEU PHARYNGITIS CUM TONSILLITIS.

Synonyms.—Inflammation of the pharynx and tonsils; amygdalitis follicularis; tonsillitis.

Etiology.—Scrofulous children are peculiarly predisposed, hereditarily, to this affection with each cold or other exciting cause.

Symptoms are the same as in adults. Difficulty in breathing and a sense of suffocation occur rarely, and sometimes there are also delirium and convulsions with high fever.

Prognosis.—Good.

Treatment.—Small children are unable to gargle, and consequently their necks should be rubbed with warm camphorated oil and covered with cotton batting. Warm drinks may be given frequently, and the steam atomizer used. Larger children should gargle their throats with warm mucilaginous decoctions, oatmeal gruel, etc. Their bowels should be carefully looked after, and diaphoresis should be promoted. Hoadley's gargle (p. 106) is very valuable in these cases, with the internal use of tincture of iron.

9. TONSILLITIS PARENCHYMATOSA SUPPURATIVA.

Synonym.—Abscess of the tonsils.

Etiology.—Frequently follows diphtheria or follicular inflammation of the tonsils, which leaves the surface roughened and predisposed to the formation of an abscess from the accumulation in these pockets of foreign matters. Sometimes laid to a cold, in a child predisposed to rheumatism.

Symptoms are the same as in adults, except the dyspnœa is greater, and there is greater liability to attacks of suffocation.

Course.—The abscess generally breaks spontaneously about the end of the second week, discharging offensive pus, with immediate relief from dyspnœa and pain. The formation of an abscess on one tonsil is often followed by a like process in the other; but simultaneous suppuration of both tonsils has not yet been observed.

Prophylaxis.—Excision of the ragged tonsil, and subsequent gargling of the throat with cold green tea after each meal.

Treatment.—If the physician is early called, as is rarely the case, he must endeavor to remove the bits of food which have been lodged in the ragged surface of the tonsil, and the incipient inflammation must be combated by cold gargles and like applications about the neck. But if the abscess has already formed, then warm gargles are to be preferred. When there is great pain or dyspnœa, the tonsil should be incised, and timely incisions are always to be made when fluctuation can be detected. Should the incision fail to reach the abscess when it is deeply seated, and as all cutting here must be done cautiously on account of the internal carotid artery, which lies behind and to the outward of the tonsil, we must rest satisfied with a single incision into the tonsil, and endeavor to relieve the pain with cocaine spray (four per cent.) until the abscess spontaneously discharges. Where there is a rheumatic diathesis, an initial dose of calomel, followed by salicylate of soda, will abort or greatly mitigate the attack.

10. HYPERTROPHIA TONSILLARUM.

Synonym.—Enlarged tonsils.

Occurrence, Etc.—Very frequently met with in children, especially scrofulous, and hence hereditary. Met with often as early as the second year, without acute inflammation; or this hypertrophy may follow repeated attacks of pharyngitis. In either case the uvula is pushed forward and upward; the isthmus of the fauces as well as the posterior opening of the nares are narrowed, and hence result a snuffling voice, mouth-breathing and, from relaxation of the uvula, snoring during sleep. If the Eustachian tube is obstructed, it interferes with hearing. In severe cases, breathing becomes difficult and quickened, and the child wears an anxious expression upon its face. Especial danger to the child is always to be feared when an attack of acute angina or diphtheritis supervenes, because then the already narrowed air-passages will be still further obstructed.

Treatment.—As long as respiration is not rendered difficult, treatment of the scrofula with cod-liver oil, syr. ferri iodide, etc., is sufficient; but when breathing becomes labored, the pharyngeal cavity must be increased by lessening the size of the tonsils.

This can be done by means of (1) puncturing them repeatedly, *e. g.*, twice a week, and afterward cauterizing the wound. (2) Extirpating at least one tonsil by means of a tonsillotome which is the best and most rapid method, because in this way the whole operation is over before the children know what the physician is about, and to this end the child should never be informed beforehand what is about to be done. The same operation may be performed later on the other tonsil. Sometimes one sitting for each tonsil is sufficient, but frequently the children are unruly, and we are often obliged to repeat the operation later in life, as it is often urgently required to improve articulation.

11. RETROPHARYNGEAL AND RETROŒSOPHAGEAL ABSCESS.

Definition.—Abscess behind the pharynx or œsophagus.

Etiology.—Caries of the cervical vertebræ, or more rarely suppuration of the retropharyngeal lymphatic glands. Again, it may have an idiopathic origin, as is the case with scrofulous, tuberculous and rachitic children.

Symptoms.—At first there is difficulty in swallowing, and to this are soon joined stiff neck, tenderness of the cervical vertebræ, and the voice becomes snuffling. Later, the head is bent strongly backward as far as possible to prevent dyspnœa; nevertheless respiration becomes difficult and stertorous, but not whistling, as in croup, while the facial muscles twitch and speech is unintelligible. The posterior wall of the pharynx is at first only reddened and somewhat swollen, soon it is evidently protruded as a fluctuating tumor, which sometimes crowds forward the uvula. Finally, the abscess opens and an enormous quantity of pus is poured forth into the mouth, and if this happens during sleep, the pus may flow down into the larynx and result possibly in suffocation.

Prognosis.—Bad, though not necessarily fatal.

Treatment.—Quiet and bits of ice. Timely incision must be employed after the abscess forms in consequence of suppuration of the lymphatic glands; but if the abscess arises from caries of the cervical vertebræ, we must delay incising it until there is real danger from suffocation. After opening, lying on the back for months and iodide of iron are to be prescribed.

DISEASES OF THE ŒSOPHAGUS AND STOMACH.

1. MALFORMATIONS OF THE ŒSOPHAGUS,

Such as fistula colli congenita, stenosis of the œsophagus and diverticular pouches of the same, are sometimes met with, but are very rare, and can be remedied only by the aid of the surgeon.

2. ŒSOPHAGITIS

Has been described by Brush as a separate disease, characterized by heat, redness, pain in swallowing and between the shoulder blades, etc.; but when it exists it is probably merely an extension of catarrhal stomatitis (see page 146), and requires the same treatment.

3. INFANTILE VOMITING AND DYSPEPSIA.

Vomiting is the natural and easiest method of relieving the child of injurious ingesta. Hence, unless associated with gastric catarrh, so long as the child does not waste, it is not a matter of serious import. But when a symptom of gastric catarrh, or symptomatic of other troubles than gastric, it deserves the careful attention of the physician. More cases of death result from neglected dyspepsia than from all other preventable causes of children's disease. Hence the importance of the subject. The reader's attention is called to the subject of artificial feeding (page 55), and he is again reminded that all foods may be divided into—

(*a*) Inorganic salts, or those which, having served their purpose in the economy, are excreted unchanged.

(*b*) Albuminoids, converted into peptones by gastric juice (pepsin), and by trypsin in alkaline media.

(*c*) Fats, mainly digested by pancreatin in smaller intestine; also assisted by bile and Brunner's glands secretions.

(*d*) Saccharine and starchy carbohydrates, changed into glucose by saliva and intestinal juices (invertin).

Chemically, we may have a dyspepsia of any of these, but clinically, it is convenient to divide the dyspepsias of childhood into—

1. Mucous dyspepsia (Apeptic dyspepsia).

2. Acid dyspepsia (Putrid dyspepsia).

3. Intestinal dyspepsia, or that of fats, starch, etc., in the lower part of the alimentary canal.

APEPTIC DYSPEPSIA should be limited to those cases in which there is failure on the part of the child's stomach to secrete a proper quantity or quality of pepsin. This is characterized by the frequent ejection of undigested milk, either by vomiting or in the feces. Otherwise the passages may be natural, and the appetite excellent, nevertheless the child wastes and passes into a marasmic condition, not from a lack of food, but from failure to assimilate sufficient to keep up the nourishment of the body. The mother's milk may be good, perhaps too good, and yet the child does not thrive, and is very apt to fall a prey to some intercurrent disease, which a better nourished child would have successfully resisted.

Prophylaxis and Treatment.—The very name of this disease suggests its only successful treatment, viz., the addition of sufficient artificial digestants to supply the stomach's lack. These are the cases in which a reliable pepsin yields the most gratifying results. This form of dyspepsia is not as frequently met with as the others, but it is the one most amenable to treatment, of them all. Apeptic dyspepsia is, as a rule, attended with gastric catarrh. Perhaps it is its most frequent cause, the abundant alkaline mucus undoubtedly neutralizing and rendering inert the peptic juices of the stomach. In these cases the gastric catarrh requires treatment fully as much as the apepsia, which improves pari passu with the catarrh. Of all remedies for this we much prefer the subcarbonate, or subnitrate of bismuth in ordinary cases. This is usually sufficient, but occasionally we have hastened convalescence by substituting pyrophosphate of iron for the bismuth for awhile, or when there is considerable gastric torpor trying minute doses of Fowler's solution or tinct. of nux vomica. German authors and teachers speak very highly of a tincture of the malate of iron in such cases, but that to be obtained in this country has no apparent advantage over the ordinary tincture of the chloride, or the lactate of iron. And, of course, all treatment is useless unless you can regulate the number and kind of feedings the child receives.

ACID DYSPEPSIA is that arising from an excess of acid in the

stomach, either lactic or hydrochloric, according to the stage of digestion, which unduly clots the casein and produces thus, in addition, gastric catarrh, enteritis, entero-colitis, etc. This form of dyspepsia differs from that first mentioned in the acid eructations, sour vomit and colicky pains of acid dyspepsia. The passages are too frequent, at first hard, sour and curdy, and later, loose, copious and inclined to become colorless.

Prophylaxis is more satisfactory than later treatment, for at first we have to do only with a chemical problem, but later with pathological changes as well. The earliest symptoms call for the free use of barley water as a diluent, or the use of Meigs' cream mixture (page 56), or the entire disuse of milk for a day or two, and the substitution of peptonized beef or mutton broth in its stead. For later complications, see Entero-colitis, page 163.

FAT DYSPEPSIA is occasionally seen, and in such cases pancreatic extract, or pancrobilin, is valuable. For other forms of intestinal dyspepsia, see Gastro-duodenal Catarrh and Affections of the Intestinal Canal.

CLASSIFICATION OF CHILDREN'S DIARRHŒAS.

(*a*) *Functional.*	(*b*) *Pathological.*
1. Cholera morbus.	1. Dysentery.
2. Catarrhal (non-inflam.).	2. Entero-colitis.
3. Gastro-duodenal catarrh.	3. Enteritis follicularis.

Or, as has been done by some authors, there is a possible classification according to passages, *e. g.*, Feculent, Dysenteric, Bilious, Serous, Lienteric, Tubularis, Gypsata, etc.

Etiology.—Sympathetic, Irritative, Bacterial, Toxic, all of which will be discussed more at length under the various forms of diarrhœa.

4. CATARRHUS GASTRO-INTESTINALIS ACUTUS.

Synonyms.—Cholera infantum; epidemic cholera; acuter magendarmcatarrh; entero-colitis choleriforme.

Etiology.—Faulty nutrition of the child especially apt to occur in summer from milk rapidly becoming sour, or improper foddering of the cows, or it may arise from abnormal irritation

caused by fermenting food, teething, colds, or emotional excitement. Vaughan thinks these cases due to the production of tyrotoxicon, a poisonous alkaloid formed by the decomposition of milk. Dr. Brush believes it a poison produced in cows' milk by over-heating, and Dr. Brunton states that the alkaloids resulting from the decomposition of albumin cause diarrhœa (toxæmic) with the nervous symptoms of summer diarrhœa (Holt).

Symptoms.—Frequently we learn that for some time the child's food, generally cows' milk, has been vomited at times, with usually one or two days of prodromal restlessness. Or there may suddenly occur in the onset of the disease an alteration in the stools, which may still be normal, up to four in number, but are passed rapidly one after another, and contain either undigested, curdled milk, or consist of frothy masses of a strongly acidulous and penetrating odor. After this condition has lasted for several hours, or without any premonition, yellowish-green, watery stools, with a stale or sour smell, occur in great numbers, twenty to thirty. "Rice-watery" at first and very profuse, running through napkins, and often the bed-clothes also; at last, stools are tinged with blood, with simultaneous vomiting of all ingesta. As the supply of fluids discharged from the intestines can only be procured from those of the body, viz., that contained in the blood, areolar and muscular tissue and even the brain, whose fluids may be reabsorbed to supply the drain of this serous hemorrhage, this produces disturbance of circulation everywhere. The pulse becomes small and frequent, the nose and the extremities become cool, the skin and the urine scanty. The child becomes blue and pinched looking. The features become senile, the eyes hollow, the great fontanelle sinks in and the borders of the cranial bones override each other. Very rarely, even now, a reactive fever occurs, with cure or a transformation into chronic gastro-intestinal catarrh. Generally, however, death occurs in from two to six days, with the symptoms of spurious hydrocephalus, characterized by moaning, restlessness, eyes dilated, immobility of the pupils, convulsions, dyspnœa from anæmia of the medulla oblongata, and marantic thrombosis of the cerebral sinuses. Or death may result from pneumonia, which frequently arises from

the passage of part of the food down the trachea (Schluck-pneumonia).

Prognosis.—Generally bad. May die in six to twelve hours, usually not for twenty-four to thirty-six. Statistics show improvement in mortality of late years or better diagnoses.

Treatment of cholera infantum. (1) Keep child in temperature below 80°, better below 70° (F.); in open air, if possible. Watch carefully diet and guard against initial diarrhœa. During stage of evacuation give aromatic spirits of am. with calcined magnesia, teaspoonful every thirty minutes.

(24)

℞. Sp. am. aromatici, ... 4 c.c.
Magnesii exsiccatæ, ... 2 gm.
Aquæ anisi, ... 50 c.c.
Tr. opii camph., ... 4 c.c.

Might substitute bismuth for the magnesia, if much vomiting. Rectal injections of chloral hydrate; giving one grain for each year of child's age, and collodion over abdomen, or hot pack, mustard or red pepper in the bath. If this does not produce reaction, then give quinine hypodermically, with $\frac{1}{120}$ grain morphine.

5. SIMPLE CATARRHAL OR SEROUS DIARRHŒA.

Synonyms.—Intestinal catarrh, without anatomical changes; acuter darmkatarrh; diarrhée catarrhale; diarrhée idiopathique.

Varieties.—Lienteric (irritative), dentition (reflex), idiopathic, symptomatic, diarrhœa ablactatorum, "lienteric laiteuse" (B).

Etiology.—Nervous excitement of the muscles of intestines (Bouchut), either simply from mental impressions, reflexly, or from irritation within the tube itself (worms, curds, etc.); also critical in certain diseases, as measles, etc.

Exciting Causes.—Cold, bad hygienic surroundings, fear, anger, rachitis, suffering of protracted dentition, intestinal worms, impressions made upon nurse, eruptive fevers, wrong foods, poor nurse, weaning, suppressed eruptions, fruit, etc.

Predisposing.—Bad air, hospitals, foundling and other asylums, uncleanliness, hot weather continued for several days.

Principal of these in young children is unsuitable quantity or

quality of their food conjoined with hot weather, producing, according to modern theories, a good breeding-place for bacteria in and outside of the body.

Complications.—Emaciation, if diarrhœa is persistent, the skin becomes leaden, face pinched and muscles soft, and in aggravated cases the nose becomes cool and symptoms of anæmia of the brain supervene.

Symptoms with a very young child are most marked at night, and consist of light sleep, frequently interrupted by cries and colic, which leads it to twist and turn and flex its thighs on abdomen. During the day the child is peevish and fretful, and appears from time to time to actually be in suffering, as the face changes in expression.

At first there is no fever, and the child nurses less eagerly but well, although it swallows less easily and often regurgitates bits of curds, while the intestinal discharges are at first thin and mucous, or firm, mixed with undigested food, bits of meat, vegetables, or lumps of casein, etc. At first they are of a normal color and homogeneous, later they become greenish and thin, the gray, rice-water stools of summer diarrhœa, in which case the stools are odorless, of neutral or alkaline reaction, and often ejected with great force, after which the colic generally ceases. In addition there are moderate distention of the abdomen with tenesmus and intestinal gurgling (borborygmi).

Course.—Recovery takes place more frequently than in cholera infantum; in one or two days the stools gradually become more consistent, though still mixed with mucus. In others, constipation follows and the appetite improves, but if the nutrition is faulty, relapses are very prone to take place. These, at last, transform themselves into a chronic intestinal catarrh with tabes, but this may also develop itself directly from an acute diarrhœa without the intervention of relapses. In such cases the mesenteric glands are never infiltrated and enlarged, or at most they are hyperæmic.

Prognosis.—Favorable, if checked in two or three days; after that very prone to run into inflammatory form, so never safe to make an absolute prognosis.

Treatment.—The indications in general for the treatment of serous diarrhœa in infancy are these, viz., (1) To empty the bow-

els. (2) Stop decomposition. (3) Restore healthy action of the intestinal canal. (4) Treat resulting lesions.

1. To remove curds and undigested food, nothing is better than castor oil (℥j in hot milk, Jacobi), or small and repeated doses of calomel, if the stomach be very irritable, or by warm water enemata. (Oj for child for six months, or enough to reach the ileo-cæcal valve.)

N. B.—With mild cases this is often all that is required.

2. To arrest decomposition a large number of antiseptics have been proposed, and of these, according to Starr, the best are salicylate of soda, or naphthalin; one to three grains of the first every two hours (readily soluble). Naphthaline is insoluble, and has a strong odor, but can be given rubbed up with sugar of milk (gr. j–v, p. r. n.). Resorcin and bichloride of mercury are recommended by others. (One of the best is salol (gr. ij–iv) combined with bismuth).

3. To restore healthy action to inflamed mucous membrane—

(25)

℞. Subnit. bismuth., ... gr. ij–iij
Pulv. Dover's, ... gr. ½. M.
Sig.—Every two to four hours.

Or—

(26)

℞. Salol, ... gr. j.
Bismuth. subnit., ... gr. iv–vj.

The same, or—

(27)

℞. Bismuth. subnitrat., ... gr. j–iij
Tinct. opii camph., ... gtt. iv
Mist. cretæ,
Aquæ anisi, ... aa . . . . ℥ss. M.
Sig.—Every two hours.

Hutchinson prefers salicylate of bismuth or chalk, gr. ij–v. Germans speak well of benzoate of soda, gr. ij–iv, pro dosi in simple elixir. A favorite prescription is—

(28)

℞. Sodii bicarb., ... ℥ss
Syr. rhei aromat., ... ℥ss
Aquæ menth. pip., ... ℥iiss. M.
Sig.—℥j every two hours.—(Starr.)

Or— (29)

℞. Sod. bromid., ... 4
Syr. rhei aromat.,
Tinct. opii camph., ... āā . . . . 8 c.c.
Aquæ anisi, ... ad 60 c.c. M.
Sig.—℥j every two to four hours.—H.

Prophylaxis.—The intestinal discharges must be carefully looked after, especially in the summer time, and their least departure from a normal condition should at once be promptly rectified by change of milk, or, at least, by the addition of a little soda bicarbonate. Health and habits of mothers and wet-nurses must also be carefully looked after, and changed if necessary.

Hayem thinks the green passages are contagious from the presence of bacteria, which flourish only in an alkaline or neutral medium. Experiments seem to show that lactic acid is very destructive to them, hence Hayem prescribes:—

(30)

℞. Lactic acid, ... 2 c.c.
Simple syrup, ... 98 c.c.
Lemon juice, ... q. s. M.
Sig.—℥j every three hours.

Gastro-duodenal catarrh, the so-called bilious diarrhœa, is one of the symptoms of hepatic incompetence (see page 166), and needs treatment more by regulation of diet than by checking the diarrhœa. This and the vomiting may be so annoying as to require immediate relief, which can be usually most promptly attained by the use of minute doses of calomel ($\frac{1}{12}$ to $\frac{1}{20}$) combined with bicarbonate of soda and bismuth. The after-treatment consists in the regulation of the duodenal dyspepsia and the use of such foods as will least tax this part of digestion. If this is not done, the child soon regains its appetite, eats inordinately, overtaxes its hepatic secretions, and culminates matters before long with another bilious attack. The indications then are: (1) Relieve hepatic incompetence and catarrh. (2) Keep bowels regularly emptied of fermentable and undigested food.

Both are well accomplished by the use of phosphate of soda or chloride of ammonium in some such mixture as the following:—

(31)

℞. Sodii sulphat., ... 2 gm.
Phosphate soda, ... 8 gm.
Cascara cordial, ... 60 c.c. M.
Sig.—℥j–ij night and morning, as required.—H.

With regulation of the diet as before indicated—cocoa, chops, steak, toast, oysters and soups being the foods best adapted for such cases.

6. CHRONIC INTESTINAL CATARRH.

Synonyms.—Enteritis follicularis; chronic diarrhœa; summer complaint; atrophia lactantium (Cheyne); entero-colitis.

Symptoms.—An acute diarrhœa or an attack of cholera infantum, ending neither in death nor cure, leaves the physical forces of the body in an unsettled condition, while the discharges remain persistently thin and gradually acquire the penetrating odor of decomposition. Their color is very various. Stools pasty, of undigested milk and sluggish liver. The anus and thighs become excoriated by the acrid discharges, and the abdomen is markedly distended and meteorismic. At the same time there is high, continuous fever and great thirst. Sometimes, after giving too much drink, vomiting results, and sometimes the appetite is very good, at times, abnormally so (bulimia, polyphagia, or fames canina. The same is often observed in children suffering from intestinal worms and chronic cerebral disease). But notwithstanding this voracious appetite the child atrophies rapidly, if it has not already done so, until it looks like a skeleton with a distended, tympanitic belly. The lymphatic vessels, with their valve-like nodules about the size of the head of a pin, may often be recognized in the skin. In the atrophy the brain participates, and, in consequence, the bones of the skull override each other, *i. e.*, the parietals overlap the occipital and frontal, so that in the further progress of the disease, besides the carrion odor of the stools, the symptoms of brain atrophy and anæmia (see page 119) present themselves, and, as a rule, almost without an exception, death follows soon after the coating

of the tongue with thrush, although it may not take place until several weeks later.

Pathological Anatomy.—"Cut-beard" follicles, and infiltration of the submucous cellular tissue of the *whole colon* and a portion of the small intestines, the *superficial surface* of which shows signs of an acute catarrh in the loss of its cylindrical epithelium with abundant secretion of mucus. Besides, many of the solitary glands and Peyer's patches are swollen and infiltrated, and have degenerated into ragged ulcers. The mesenteric glands form enlarged and infiltrated patches—red-grayish white, and showing injected lacteals and chyle stains. If tuberculous, they are seen as gray or yellow granulations under the microscope. Many slough out and show actual ulceration.

Differentiation lies between incipient tuberculosis and chronic follicular enteritis; but, remember, that the former has an evening rise of temperature, while the latter may be exactly the reverse.

Treatment.—Successful treatment is more a matter of the regulation of diet and hygiene than medication, though the latter is necessary. Cleanliness is a *sine qua non* to recovery, hence an abundance of clean napkins and bathing must be insisted upon.

Diet Hints.—Cocoa is constipating in its effects and nutritious. A little fresh butter will sometimes be assimilated. Cod-liver oil is usually not well borne, hence rub it on externally. Koumiss is valuable for an irritable stomach. Beef-tea—do not give it—is a stimulant, and whisky is much better. Beef-tea is a laxative, and hence do not use it, except as an occasional change. Raw or pounded beef is good. Hash finely, rub through a grater, put a little sugar on it, and a child will take it eagerly, but it (1) gives horrible fecal passages; (2) may produce tapeworms.

Prognosis.—Always serious; generally fatal. Apparent cessation of diarrhœa not always hopeful, but hope on if without complications. Secondary less hopeful than primary. Worst stools are fetid, chopped spinach, with dirty-brown fluid; more consistent passages the better prognosis. If intercurrent disease appears, prognosis is hopeless.

Medication.—The initiatory acute diarrhœa must be quieted as quickly as possible, for if it has passed into the chronic state, only a small portion can be saved, even with a wet-nurse. If a *wet-*

nurse is not to be had, then try substitutes (see page 56), but remember that "one lump of indigestible food does more hurt than all medicines help." Antacids as long as sour smell. Underwood says add aromatic astringents, like tannin, fld. ext. coto, tinct. catechu, or, if the progress is very slow, quinine (tannate, gr. ij, p. d.), scraped raw beef, yelk of eggs, cocoa, soups, and good old rum. Don't forget the importance of good air, for dampness is almost as bad as sudden changes to these children. As a last resource, use rectal injections of nitrate of silver or bismuth subnitrate and tinct. of opium suspended in starch water.

7. DYSENTERY.

Definition.—Inflammation of the colon and rectum attended with bloody stools and tenesmus. (See page 99.)

Etiology.—Epidemic and sporadic, the former clearly infectious, possibly contagious. Most common between two and three years of age.

Symptoms.—Nausea, vomiting, high fever and abdominal pains. Passages very frequent, painful, and soon mixed with pus and blood. Face anxious, tongue dry and brownish, loss of appetite and great thirst, abdomen distended, and tenesmus more and more distressing.

Prognosis.—None too favorable, even in the sporadic forms.

Treatment.—Absolute rest must be insisted upon, and the child fed on browned flour and scalded milk with cracked ice or toast water for thirst. Of remedies, the best are—

(32)

℞. Olei ricin., ... ℥ijss
Tinct. opii deod., ... ♏viij
Pulv. acaciæ,
Sacch. alb., ... āā . . . . . ℥ij
Aq. menth. pip., ... ad ℨij. M.
SIG.—℥j every three hours.—(STARR.)

or rectal injections containing gr. iv–v of chloral hydrate with fl. ext. ipecac suspended in starch water *immediately after a passage.* Others claim the very best results from minute doses of corrosive sublimate given every one to two hours with the food.

DISEASES OF THE LIVER, PERITONEUM AND LOWER INTESTINAL CANAL.

1. INSUFFICIENT FORMATION OF BILIARY SECRETIONS

Is perhaps rather a symptom than a distinct disease, but it is so frequently met with in nurslings that it requires a word or two of description.

Etiology.—Artificial nourishment, especially when there is coincident dyspepsia and malassimilation of albuminoids.

Symptoms.—Without icterus. The feces are like crumbling, soft, gray, grayish-brown or yellow clay, often being discharged with great exertion, and can be shaken out of the diaper without leaving a mark behind. Generally the nutrition of the child falls away.

Treatment.—Gr. ij pulv. rhei with as much mag. usta or sulphate soda in small doses twice a day. Sometimes a change of food alone will produce an improvement; or, if a more efficient remedy is required, try

(33)

℞. Podophyllin, ... gr.j
Alcoholis, ... ʒj.

gtt. iv–v on lump sugar as required, or podophyllin granules, p. r. n., or the free use of lithia water and an occasional laxative dose of phosphate of soda, will work wonders in these cases.

2. MALFORMATION OF LIVER AND GALL-BLADDER.

Of the *malformation* or arrest of development of the liver, we may note that it may be entirely absent, especially in acephalic children. Again it may be variously modified in form; *e. g.*, there may be no separation into lobes, or there may be supernumerary ones. The same may be true of the gall-bladder. In a case of congenital cleft diaphragm the liver may be found in the thoracic cavity, more rarely on the right side. In umbilical hernia—cleft abdomen—it lies outside of the abdomen, and where there is situs transversus viscerum the liver, of course, lies on the left side, but it

should always be remembered that the liver is relatively larger in children than in adults.

Atresia and stenosis of gall duct have been noted.

3. HEPAR ADIPOSUM.

Definition.—Fatty liver, either from infiltration or degeneration.

Pathological Anatomy.—Cell-walls uninjured, surface oily and glistening, margins rounded, doughy and of a yellowish tint.

Occurrence.—A mild degree is always met with in the infant liver, where it is the physiological result of the child's milk diet, which has a superabundance of hydrocarbons, or after cod-liver oil medicinally.

Etiology.—Pathologically, is always a secondary result in certain diseases tending to emaciation, as scrofulosis, pernicious anæmia; fatty infiltration more frequent than fatty degeneration, and is found after tuberculosis of the various organs, rachitis, protracted diarrhœa, enteritis follicularis, typhoid, syphilis, etc., its cause in these cases being a faulty assimilation of food, whereby the fat normally deposited in the subcutaneous cellular tissue is absorbed, accumulates in the blood and is subsequently deposited. The liver is enlarged and can be detected by percussion, unless covered by inflated loops of intestine, and never gives rise to ascites.

Symptoms.—The edges are blunted and its upper surfaces smooth. If the ramifications of the portal vein are affected by the atheromatous degeneration, we then find the familiar reticulated appearance, known as *nutmeg liver*. If the hepatic veins have also become implicated, a cross-section covers the blade of the knife with fat and shows a uniform, pale yellow surface.

Course.—If recovery from the primary disease takes place, absorption of the deposited fat occurs and the corresponding enlargement of the liver disappears.

Prognosis is really that of the primary disease, for if that is curable, the fatty liver is also.

Treatment is that of the primary disease.

4. AMYLOID DEGENERATION OF THE LIVER.

Synonyms.—Waxy liver; lardaceous liver; speck-leber; wachsige-leberentartung.

Definition.—Albuminoid infiltration of the substance of the liver, causing increase in its size. This infiltrate gives with an aqueous solution of iodine a bright brownish-red reaction, the color becoming blue upon the addition of dilute sulphuric acid.

Occurrence.—Not a very infrequent disease of the liver, being found chiefly between the ages of four and fourteen years, and is always accompanied with marked increase in the size of the liver. It has been met with as early as the fifth week (Steiner), but is most frequently observed about the fifth year, and boys are apparently more subject to this disease than are girls. It is seldom confined to the liver alone, but affects the spleen, kidneys, intestinal and lymphatic glands as well.

Etiology.—According to Lawrence Johnson, amyloid degeneration of the liver is always preceded by chronic suppuration or caseous degeneration elsewhere in the body. Steiner insists that amyloid disease of the liver may exist independently, but is usually found associated with chronic suppuration. Others claim that it may result from syphilis, rachitis, or even eczema of the scalp, though the diseases that it most frequently follows are bone caries, tuberculosis, chronic pneumonia, abscess, variola and pleurisy. In short, it may be said that whenever there is caseous degeneration, or chronic suppuration in any of the organs of the body, amyloid degeneration of the liver, kidneys or spleen is a later possible complication.

Symptoms.—Amyloid degeneration has no characteristic symptoms in its beginning, other than those of preceding diseases already noted. After protracted illness from any of these causes, the patient is observed to become pale and his complexion waxy. At the same time there is emaciation, and the appetite is greatly impaired, especially as regards animal food. There is diminished secretion of the bile, and the stools, in consequence, are light-colored and very offensive. The liver can be felt as a smooth, hard tumor, sometimes extending to the crest of the ilium, with bluntly-rounded edges, distending the abdomen and making its

cutaneous veins prominent. If there is concomitant disease of the kidneys, there may be œdema or albuminuria. If the spleen is affected, it will be found enlarged, and intestinal complications produce diarrhœa and hydræmia. Death usually preceded by ascites, which invariably accompanies sufficient enlargement of the liver, whose weight has been known to reach one-eighth that of the entire body.

Pathological Anatomy.—The liver is always increased in size; at times greatly so (7 lbs. 10 ozs., Steiner), and is firmer than normal in texture. Its edges are rounded, the color grayish-yellow to light brown, and its cut surface smooth and shining, and bathed with a small quantity of viscid bile. The microscope shows that the smaller blood-vessels and liver acini are filled with a transparent albuminoid substance which gives a reaction with iodine similar in appearance to that produced by adding iodine to starchy substances, whence the improper naming of this disease as amyloid degeneration. A more delicate reaction is that obtained by staining the tissues with an iodo-aniline methyl solution, which colors the amyloid infiltrate a ruby or reddish violet tint, and colors the healthy tissues bluish violet.

Treatment.—Cure, if possible, the primary disease as speedily as may be, lest amyloid degeneration appear in other organs. To this end take especial care of nutrition, employing, in addition, such drugs as potassium iodide, syrup of the iodide of iron, ammonium chloride, or dilute muriatic acid. Quinine, iron and country air are all valuable in improving the general nutrition.

Prognosis.—Generally unfavorable, the disease being almost always fatal, especially if dropsy has appeared. Initial amyloid degeneration accompanying diseases which are curable may disappear upon the removal of such diseases.

5. CIRRHOSIS HEPATIS

Occurs early in childhood, although it has been observed in the newborn. Its etiology is usually unknown, though sometimes it is due to the early use of alcohol.

Symptoms, Prognosis and Treatment same as in the adult.

Hepatitis Interstitialis Syphilitica.—See *Syphilis.*

Tuberculosis of the Liver.—See *Tuberculosis.*

6. DISEASES AND MALFORMATIONS OF THE SPLEEN.

Amyloid degeneration of the spleen is observed concomitantly and as a consequent of the causes which produce like degeneration of the liver and kidneys. Either the small arteries of the Malpighian tufts may be attacked and we have what is known as **sago spleen**, or the whole organ may be uniformly affected, producing the **lardaceous spleen**, in which the spleen becomes enlarged to a hard, smooth tumor easily felt. At the same time diarrhœa and albuminuria are present, due to similar affections of the intestines and kidneys.

Infarctions of the spleen leading to inflammation of the same (splenitis), are certainly often of embolic origin.

Neomata (new formations) are observed in the spleen, as is miliary tuberculosis, and in the very rare cases of splenic echinococci.

Splenic Lymphomata are met with in leucocythæmia, in which there is an increase of white blood corpuscles, and in pseudo-leucocythæmia, with swelling of contiguous lymphatic glands—especially cervical. Both of these conditions give an enlarged spleen with a perceptibly uneven surface. Lymphomata appear at autopsies as whitish, or grayish red tumors about the size of a pea.

Wandering spleen has been observed by Steiner in a two-year-old rachitic child; in this case the spleen at times was found in the left inguinal region and again between the umbilicus and symphysis.

7. PERITONITIS.

Synonym.—Bauchfellentzündung.

Occurrence.—Even in utero. Not infrequent with children, especially traumatic peritonitis.

Etiology.—Fœtal peritonitis is due either to secondary syphilis or to septic infection from the mother in the later stages of pregnancy.

Peritonitis in infants is due to the same causes as in adults, or to umbilical phlebitis, or gangrene, which are especially prone to occur simultaneously with puerperal fever in lying-in hospitals and

foundling asylums. The peritonitis of larger children arises, usually, from traumatic influences, colds, pyæmia, acute exanthemata (especially scarlet fever), intussusception, strangulated hernia, or very rarely from perforation of the stomach or intestine. Rarely also worms penetrate the intestine and pass into the peritoneum, and produce what is known as worm abscess. Gonorrhœa may also produce peritonitis in the female child.

Symptoms.—Vomiting is usually one of the most marked and the earliest symptoms in acute peritonitis. The abdomen is tense and distended with meteorismus, and is painful to the touch and to the respiratory movements. Hence the patient endeavors to avoid every motion and assumes a crouching position. His feet are usually outstretched and breathing very superficial and short, in order to prevent, as far as possible, all motions of the diaphragm which are painful. Hence breathing is very imperfect and with a short cry whenever a deep breath is taken. At the same time fever and a rapid pulse are present, while later collapse occurs. Infants refuse the breast. Their facial muscles are painfully distorted and the countenance is often cyanotic. In circumscribed, or chronic peritonitis, the pain is less, often only occurring on pressure.

Prognosis.—Fœtal peritonitis frequently leads to angulation, or stenosis, of the intestine, and likewise to secondary ascites. Peritonitis of the newborn generally ends fatally in 1–3 days; very rarely the sero-purulent exudate finds exit via the still patulous canalis vaginalis testiculi, or by way of the umbilicus. Death may occur in older children from pyæmia, tuberculosis of the peritoneum, or pneumonia. Cures have been known to result after a discharge of the purulent or sero-purulent fluid externally, or a purulent discharge may persist for years through the fistulous opening thus established, but it may be said that, in general, the prognosis of peritonitis is unfavorable. When the case is complicated with pyæmia, septic infection or intussusception, death is certain. The circumscribed peritonitis of older children, which points and discharges externally, may result in recovery.

Treatment.—Traumatic peritonitis, if the child is robust, will permit local abstraction of blood, but generally, in acute peritonitis, cold is especially indicated. As it is difficult to use ice blad-

ders, as their pressure is painful, we must generally be content with cold applications; frozen cloths in winter. Calomel is called for if the attack is ushered in with constipation, while opium and morphine are our main reliance against the pain and diarrhœa. If vomiting supervenes, they must be administered by enema or subcutaneously. When the pain has somewhat diminished, but the meteorismus is still great, the whole abdomen may be coated thickly with collodion. Bits of ice for vomiting and stimulants for collapse. If it is probable that the pus will discharge externally, try to assist by cataplasms, and as soon as an accurate diagnosis of the position of the pus can be made, give exit to it by means of an incision, or, better, by the use of an aspirator.

The after treatment consists of warm baths and nourishing, easily-digested food, and if an incision has been made, in keeping the pus cavity well drained and frequently cleansed with some non-poisonous antiseptic solution, best, peroxide of hydrogen.

Chronic Peritonitis is sometimes met with in children, the first symptom that attracts the physician being usually ascites, for which see following section.

8. ASCITES, OR ABDOMINAL DROPSY.

Definition.—This is the name given to any dropsical transudation into the peritoneal sack. It is not a disease, but a symptom common to several, *e.g.*, disordered circulation, hydræmia, or a diseased peritoneum.

Etiology.—Very frequently due to affections of (1st) the heart, especially of the tricuspid valve; (2d) of the lungs—atelectasis, emphysema; (3d) of the liver—syphilitic gummata, pylephlebitis; (4th) of the spleen—malaria; or (5th) of the kidneys—as in Bright's disease, after scarlatina, with œdema and hydrothorax, in consequence of hydræmia. Furthermore, the pressure of the infiltrated or waxy lymphatic glands upon the inferior vena cava or portal vein may lead to the same condition, and more rarely ascites is found as a symptom of tuberculosis of the peritoneum and its resulting chronic peritonitis.

Symptoms of ascites are the same in the child as in the adult. Small effusions are better detected sitting or reclining than lying on

the back. Death usually results from exhaustion or complicating diarrhœa, peritonitis or pleurisy.

Prognosis.—Not necessarily hopeless, though, as a rule, discouraging, unless the primary cause of the disease is removable. Goodhard believes that the prognosis in tubercular peritonitis is far better for the child than the adult.

Treatment.—While the effusion is small, our main reliance is to be placed in diuretics, such as acetate of potash, infusion of digitalis or fluid extract of apocynum cannab. As soon as anasarca appears, we must employ vapor baths and cathartics, the most reliable of which is elyterium, with tonics and iron to preserve the general health. So soon as the action of the diaphragm is interfered with, tapping should be resorted to and repeated as required, or permanent drainage, as advised by A. Caillé, employed.

9. DISEASES OF THE MESENTERIC GLANDS.

Etiology.—The mesenteric glands always become implicated secondarily in all protracted intestinal troubles, *e.g.*, may become *enlarged* in typhoid, follicular enteritis, but rarely can be recognized by palpation on account of the meteorismus generally accompanying these diseases. Moreover, these glands may undergo *caseification* with a simultaneous deposition of tubercle (see Scrofulosis and Tuberculosis), especially when previous morbid conditions—typhoid, repeated intestinal catarrh—have enlarged them, and moreover when they do not diminish in size with the cessation of the disease. Lastly, *amyloid degeneration* of the mesenteric glands has also been observed.

Treatment.—See Tuberculosis.

10. KOPROSTASIS.

Etiology.—Lead poisoning (from licking cards or leaden toys), or when the rectum is diseased, as from polypus or fissures. Constipation also occurs as a marked symptom in tubercular meningitis, in atrophic children—where there is atrophy of the abdominal and intestinal musculature, also in peritonitis (early). Constipation, found in feverish conditions, is due either to too tenacious

or too scanty intestinal secretions, or from a deficient supply of fluids.

Symptoms.—A nursling ought to have two to three passages, and a child at least one daily, or the abdomen becomes distended and the appetite impaired. At first there is meteorismus to a great degree, and if the constipation persists, the abdomen becomes tympanitic and sensitive to touch. Belching, vomiting, loss of appetite, and, in small children, convulsions are the natural consequences of habitual constipation. Nutrition always suffers. Often from pressure upon the intestinal veins a venous collateral circulation is set up in the abdominal coats. When at last, by the strenuous exertions of the child, a passage is obtained, the stool is a hard mass, from want of fluids or intestinal secretions, or appears as a clayey, grayish or light-yellow bits in the diaper.

Prognosis.—Favorable except in cases of meningeal tuberculosis, twisting or intussusception of the intestine.

Treatment.—(1) Examine for mechanical interferences. Strangulated hernia can generally be reduced by taxis. (2) Transient aid may usually be obtained by the use of lukewarm water enemata of soap water, or cold vinegar clysters, or by soap suppositories (one inch long). To give a clyster successfully, the child must lie on the right side, so that the water injected into the sigmoid flexure may by its own weight pass into the right side of the abdomen. When the enema proves useless, either the feces are situated too high up, when the enema does not return, or if it does, without the stool, or on the other hand the feces may be impacted so low down that the enema immediately flows back. In this case the removal of the first hardened scybalæ by the finger or spoon handle can hardly be avoided; in the former, laxatives only are of use, *e.g.*, $\frac{1}{20}$ gr. calomel hourly, or milk of magnesia. (3) Endeavor by all means to discover and remove the cause of habitual constipation, since it usually lies in faulty nutrition, a change in which generally produces a successful result. Give amylaceous food as little as possible, in its stead giving beef-tea, or meat, or when the children are older, baked or ripe fruit, and allow it laxative food; permit the use of fresh water, which, unfortunately, is forbidden in too many families. Medicinally try the following:—

(34)

℞. Cascara cordial, ... ℥ij
Fl. ext. bellad., ... gtt. xv. M.
SIG. —C. p. nocte.

(35)

℞. Podophyllin, ... gr. j
Alcoholis, ... ℥j. M.
SIG.—5 to 10 drops on sugar.

11. INTUSSUSCEPTION.

Synonyms. Invagination, volvulus; darmknoten.

Definition.—Spontaneous slipping down of a portion of intestine (intussusceptum) into the adjacent and lower portion of the same (intussuscipiens), as a finger of a glove may be pushed down into itself.

Occurrence.—Most frequent in infants under one year, though, fortunately, rare. More frequent in boys than girls, and very frequently cadaveric (8–20 in a single abdomen).

Location.—Almost invariably confined to the small intestine, at the ileo-cæcal valve, though it may occur elsewhere.

Etiology.—Unequal innervation of the muscular structure of the intestine, or disproportionate width and mobility of the two portions of the intestinal tube connected at the ileo-cæcal valve. A strong peristaltic movement of a tightly contracted portion of intestine may drive it into another relaxed part, as often occurs during the death agony, and hence frequently found in autopsies, especially in those cases where the intestines have remained healthy, *e. g.*, brain diseases, etc. After protracted diarrhœa it may be met with in children under a year.

Symptoms are about the same as in the adult; the onset being always abrupt, with constipation, abdominal pains, intestinal hemorrhage and vomiting, which at last may be fecal in character. At last comes collapse. In consequence of stenosis and the disturbance of circulation in the mesentery, œdema and inflammation of the peritoneum appear, beginning at the point where one part of the intestine has slipped down into the other. Generally, if meteorismus is absent, a cylindrical, smooth tumor may be felt;

if, however, it is the lower portion of the colon which has slipped into the rectum, no tumor can be felt externally but it may be detected by the anus.

Prognosis.—In rare cases recovery results from gangrene and sloughing off of the intussusceptum and a complete union of the rest of the intestine where it enters into the volvulus. Or the contracted canal of the invaginated portion becomes gradually distended—wide enough to allow the passage of thin, fecal masses. Whereupon, a partial cure may take place, leaving behind chronic inflammation and stenosis of the intestines, which is a source of trouble whenever the stools become harder. On the other hand, death often occurs in 3–4 days from exhaustion, less frequently from peritonitis, inflammation of the intestine, or gangrene without adhesions.

Treatment.—Absolute rest, opium pushed to narcosis, ice applications to the abdomen, large enemata of water to free, if possible, the volvulus. Laparotomy, or the making of an artificial anus, has often led to good results, as a last resource. If recovery takes place, food must be administered for some time by enemata. Inflation by means of seltzer and rectal tube or seidlitz powders, have given good results.

12. TYPHLITIS STERCORALIS.

Synonym.—Typhlitis cum perityphlitis.

Definition.—An inflammation of the cæcum and vermiform appendage, due to a stoppage of feces there.

Varieties.—(*a*) With or without ulceration of the mucous membrane. (*b*) Complicated with localized peritonitis.

Etiology.—Foreign bodies, such as cherry-pits, grape-stones, etc., may enter the vermiform appendage and remain there, or hardened feces may accumulate there, and form local scybalæ. Any of these may cause ulceration of the mucous membrane and sometimes perforation of the vermiform appendage. In other cases an arrest of feces takes place in the cæcum without participation of the vermiform appendage, or the ulceration of the same terminates in perforation, which latter occurs frequently after traumatic injuries, as a fall, blow, etc. It is more frequent in larger children,

and in boys rather than girls, and relapses are frequent in the same person.

Symptoms usually begin with sudden acute pain, located in the right iliac region. This pain is increased upon pressure, change of position, or moving the right foot. Obstruction of the bowels, as a rule, occurs from the very beginning; later there is frequently vomiting, which is a sign of commencing ulceration, or of perforation having taken place. At first a distinct tumor, dull on percussion, may be mapped out in the right hypogastric region, but after perforation it disappears and tenderness extends over the abdomen. The whole abdomen becomes dreadfully painful, vomiting and great meteorismus supervene, and in consequence of general peritonitis death usually takes place on the third to fifth day. If, however, the intestines early form adhesions with the abdominal parietes, the contents of the tumor (feces, worms, foreign bodies, etc.), may be discharged externally.

Prognosis generally unfavorable, though a cure is possible if treatment is prompt.

Prophylaxis.—Never swallow fruit kernels, grape seeds, etc.

Treatment.—If the case is recent, the tenderness moderate, and a distinct tumor can be felt, a prompt purgative may be given. If, on the other hand, the tenderness is already great, purgatives are contraindicated. The peritonitis must be combatted by absolute rest, liquid food (lemonade, etc.), ice bags, and opium in large doses, but if perforation of the appendage and general peritonitis occur, nothing generally is of any avail. Should, however, recovery take place, the diet must be confined to liquid food and careful diet adhered to for a long time, and the bowels kept open lest a relapse occur.

13. CONGENITAL INGUINAL HERNIA.

Definition.—Although called congenital it is seldom present at birth, but produced soon after by coughing, straining or crying, and is often associated with phimosis.

Etiology.—Due to a patulous canalis vaginalis testiculi, or more rarely of the canalis ligamenti rotundi, which allows of a forcing downward of an intestinal loop from the action of the

abdominal muscles, in boys in contact with the testicle and in girls passing into the labia majora.

Symptoms.—With boys a toughish, round, soft tumor is seen extending from the internal abdominal ring into the scrotum. This tumor can be easily returned to the abdomen by pressure, being reduced with a gurgling sound. The limits of the testicle are hard to define, but it generally lies behind and above the tumor, which consists, usually, of intestine alone, though very rarely it also contains peritoneum. With girls one labia majora is swollen, and here also the hernia can be easily reduced if retained during the interval with a proper truss.

Course.—As a rule, as the child grows older, the hernia cures itself spontaneously, if retained during the interval with a proper truss, though inflammation may bring about such adhesions between the peritoneum, intestine and canal as to render the hernia irreducible. Strangulation is rarer than with the adult. (Guersant.)

Treatment.—(1) Prevent intertrigo, which is very prone to occur if the hernia be large, by washing the parts with extreme care after each wetting, and dusting with starch powder and talc. (2) The child must not be allowed to become constipated. (3) In small children the hernia must be kept reduced during sleep, and after they are a year old they should wear a truss, several of which should be kept on hand on account of their becoming wet. Wash daily with alcohol those parts which come in contact with the truss, to prevent their becoming chafed. (4) The best of nourishment always, in the hope that with the increase of adipose tissue the inguinal ring may close.

14. PROLAPSUS RECTI.

Synonyms.—Prolapse of rectum; mastdarmfall.

Etiology.—Protracted diarrhœa with atrophy; dysentery, especially when it follows obstinate constipation, and indeed the latter alone may lead to prolapsus recti. Furthermore, long-continued tenesmus, due to stone in the bladder, or persistent coughing (pertussis, etc.), always lead to relaxation of the rectum.

Symptoms.—In the place of the normal anus we find a bluish-red tumor, into whose central aperture the finger can be

introduced for a longer or shorter distance before meeting with the sphincter unless only the mucous membrane of the anal border be prolapsed.

Prolapse of the rectum may be partial, *i. e.*, affect only the mucous membrane of the anal border, or involve a larger section. In the latter case it simulates an intussusception or invagination of the middle portion of the rectum into the lower portion, or into the anus itself.

Prophylaxis.—If prolapse has once occurred, guard against its return by prevention of diarrhœa, constipation or tenesmus (opium enemata). The chamber should be placed so high that the child's feet cannot reach the floor, for straining by abdominal muscles is thus kept within safe limits.

Ice water clysters are often valuable, and if all else fail we may use rectal tampons saturated with some such astringent as rhatany, tannin, alum or vinegar. Jacobi advises an ointment of ext. nucis vomica (gr. x to ℥j).

Prognosis.—Good.

Treatment.—In atrophic children, above all other things, care should be had for good nourishment, for this alone assures the success of any local treatment. A reposition of the prolapsed mucous membrane of the anal border should be made immediately after each passage. This should be performed on the child in the knee-elbow position, gently pushing back the prolapsed portion through the central opening by means of a bit of greased cloth until the finger have passed through the sphincter, whereupon the finger must be withdrawn by carefully rotating it as it is withdrawn. If there is intussusception of the middle portion of the rectum, we must try to set it free by the careful use of a cotton tampon, or the colpeurynter, but cauterization is only permissible when the rectal wall is extremely relaxed.

15. RECTAL POLYPI.

Definition.—Pedunculated, hypertrophic growths of rectal mucous membrane.

Occurrence.—After third year, and not so rarely as generally believed, as they are often mistaken for partial prolapse of rectum.

Symptoms are like those of prolapse of the rectum, viz.: pain and hemorrhage with each passage, and sometimes persisting for a while after, if the feces have been hard. Deep-seated polypi make their appearance at the anus with each passage, at first, quickly slipping back to their places. Later, when they have grown larger, they remain longer at the anal opening and their reposition causes pain.

Prognosis.—Good. Spontaneous cures, by the rupture of the pedicle by a hard stool, seem to be frequent. The return of a polypus is not known, but the simultaneous presence of several sometimes occurs.

Treatment.—Application of a double silk thread about the pedicle immediately after a free passage is produced by means of a laxative, with subsequent reposition.

16. RHAGADES ET FISSURÆ ANI.

Definition.—Fissuræ Ani are small fissures of the mucous membrane of the anus in the vicinity of the sphincter ani externus.

Etiology.—Hard stools, or anal syphilis.

Symptoms.—Acute pain with every passage from the bowels, sometimes sufficient to cause convulsions before the passage. The stool is generally hard and is either coated with a little blood, or a little hemorrhage follows it, or both may occur at the same time. By pulling apart the folds of the mucous membrane about the anus, a wound, or a deeply hidden ulcer with more or less redness, can be discovered.

Treatment.—(1) Removal of the constipation by means of clysters, etc. (2) Cauterization of the denuded spot of mucous membrane with nitric acid or nitrate of silver. (3) In obstinate cases only, the forcible dilatation of the anus while under the influence of chloroform is to be recommended, with powdered iodoform as a local application to the ulcer.

17. CONGENITAL MALFORMATIONS IN THE INTESTINAL TRACT.

1. **Stenosis et atresia**, or narrowing or closure of the intestine, is not very infrequent in children, and may occur at various points, *e. g.*

2. **Entero-stenosis**—seu Atresia interna—is either congenital or acquired. Most frequently seen as a congenital deformity.

3. **Stenosis ani.**—See Imperforatio ani.

Etiology.—These *congenital cases* of narrowing or closure of the intestines can only be referred to interuterine cicatrices resulting from interuterine ulcers, or from the formation of peritoneal bands or tumors of the intestine in utero. The stenosis is most frequently located in the duodenum at the point of junction between the ileum and colon, or at the sigmoid flexure or rectum, a few centimeters above the anus.

Symptoms consist in a failure to pass the meconium, because when the stenosis or atresia is situated high up none is formed, and when low down the meconium cannot pass off. Soon the abdomen distends and fluids taken are rejected; if the stenosis or atresia are located high up, the ingesta are rejected as they were swallowed, but if the trouble is low down, they are thrown up mixed with meconium. Death, sometimes with convulsions, soon takes place from atresia, but if it is a case of stenosis, it may be deferred up to the tenth to eleventh day.

The acquired forms may arise from these same causes or from closure of the intestinal tube by means of indigestible food, pips, accumulation of ascarides, etc. Stenosis ani frequently escapes detection until the soft, pap-like stools of the newborn are replaced by harder, when the symptoms of narrowing of the intestinal tube first make their appearance, though they can usually be obviated by means of enemata and laxatives. More rarely, however, the stenosis is so great that there is no passage at all of meconium, or only after a very great effort.

Treatment.—The rectum must be dilated, preferably by means of a couple of sounds, as in fissure of the anus, or by nicking the same with a bistoury and a grooved director.

Imperforation.—Under the name of atresia seu imperforatio

ani, seu recti, we understand various conditions, all of which have the same termination, viz.: occlusion of the rectum.

Etiology.—(*a*) Rectum ending as a blind pouch with the anus in same condition, their floors forming the membrane which occludes the rectum.

(*b*) The rectum may terminate at any point below the sigmoid flexure and above the internal sphincter without a blind anal pouch, the rectum being attached directly to the floor of the perinæum, which gives a roundish swelling when the blind end of the rectum dilates with meconium.

(*c*) A blind pouch may be (normally) formed, but fail entirely to coincide with that of the intestines, of which the entire lower colon may be wanting. There may be a narrow canal, large enough, perhaps, to admit a goose quill, extending upwards from the anus 1-3 inches, the intestinal canal terminating in a similar blind pouch a short distance above, leaving an intermediate, tolerably firm fibro-cellular diaphragm. The anus and lower rectum may be altogether absent and the gut end in a small fistulous orifice upon the inner side of bladder, urethra, vagina, anywhere in the perinæum, or in the side or upon the anterior or lateral walls of the abdomen, or lead into the ductus omphalo-entericus. (Anus præternaturalis, ectopia ani.)

Prognosis.—Only favorable in the first variety, bad as a rule in the others, even after a successful operation for artificial anus.

Treatment.—If the rectum is clearly not the seat of the stenosis or atresia—diagnosed by passing elastic catheter to sigmoid flexure—then help can only be obtained by making an artificial anus, according to the degree of distention of the abdomen. (For steps in operation, see Hamilton's Surgery.)

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